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MANAGEMENT BY RESULTS

REPORT

ABSTRACTS OF 1986-87 RESULTS

APRIL 1988

Ontario
Ministry of the Environment

Hon. Jim Bradley
Minister

Gary S. Posen
Deputy Minister

MANAGEMENT BY RESULTS

REPORT

1986 - 1987 RESULTS

APRIL 1988

MINISTRY OF THE ENVIRONMENT
POLICY AND PLANNING BRANCH

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INTRODUCTION

This report provides a statement of the Ministry's 1986-87 actual results. The document is intended for use by Ministry line managers and complements the Summary of 1986-87 Results report.

The twenty MBR projects defined within this report demonstrate progress towards the achievement of the Ministry's corporate environmental objectives:

- to ensure that drinking water supplies are adequate for the protection of human health;
- to ensure that all surface waters are of a quality that is satisfactory for aquatic life and recreational uses;
- to protect the quality of groundwater for the greatest number of beneficial uses;
- to ensure the fair sharing and conservation of surface and groundwater;
- to encourage the development of a water supply and sewage servicing infrastructure that will support the Province's economic and social development;
- to ensure an ambient air quality in Ontario that will have no detrimental effects on human health, or on the natural environment;
- to reduce or prevent detrimental effects on land, flora, fauna and people resulting from wastes not discharged to air or water;
- to promote the safe and proper use of pesticides; and
- to provide for the consideration of natural and environmental factors in the decision-making processes of the proponents of major undertakings.

In addition, a statement of plans for the Employment Equity Program related to equal employment opportunities for women is included.

The results indicators used in this report are of three types:

- operational outputs, describing the work performed within each of the twenty projects;
- program outputs, describing the client benefits produced by each project; and
- program effects, describing the consequences or impacts of each project.

The use of these indicators is explained in detail in the document "Manager's Guidelines to Managing by Results", 1982. Emphasis is placed on the provision of verifiable information related to program outputs and program effects. (Enhancements to the documentation of environmental effects of municipal waste disposal and pesticides use have been made. As well, refinements to the reporting of results indicators for wastewater discharges and waste management practices have been incorporated.)

The twenty MBR projects previously developed are continued in this report.

Both the planned utilization and the actual utilization of resources in this report are estimates based on allocations reported by managers throughout the Ministry. The Ministry's financial information systems do not support financial accounting of expenditures for the twenty MBR projects described herein. Consequently, detailed questions concerning expenditures should be directed to other documents.

Management By Results documentation is being implemented actively throughout the Ministry, and changes to the format and to the quality and quantity of data included are occurring with each report. This document is compiled as one of a series of MBR reports by the Policy and Planning Branch using data from a number of sources internal and external to the Ministry. Any queries concerning the data in the MBR should be directed initially to:

Policy and Planning Branch
Ministry of the Environment
12th floor
135 St. Clair Avenue West
Toronto, Ontario
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MBR PROJECT ON THE PROTECTION OF DRINKING WATER SUPPLIES

OBJECTIVE

To regulate communal water supply facilities in order to provide safe drinking water for Ontarians.

DESCRIPTION

The resources assigned to this MBR Project include:

- the budget of the Policy and Planning Branch related to drinking water research,
- the person-years and budget of the Legal Services Branch related to drinking water legislation,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to drinking water quality issues,
- the person-years and budget of the Water Resources Branch related to the assessment of the health effects of contaminants which may occur in drinking water, the development of policies and plans to ensure safe drinking water, the development of methods for removing contaminants from drinking water, and the operation and maintenance of drinking water quality data bases,
- the person-years and budget of the Laboratory Services Branch related to the provision of tests of drinking water quality, and the development of analytical techniques for measuring contaminants in drinking water,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to review or establishment of standards for contaminants which may occur in drinking water,
- the person-years and budget of the Investigations and Enforcement Branch related to the investigation of violations and enforcement of regulations and legislation pertaining to water supply,
- the person-years and budgets of the Regions related to monitoring the performance of communal water supply facilities and to developing remedial measures for systems delivering an unsatisfactory quality of drinking water,
- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the certification of water supply facilities, and

. the person-years and budget of the Project Engineering Branch related to the provision of technical assistance to operating authorities.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of municipally operated communal water supply facilities	372	365	375	365
No. of Ministry operated communal water supply facilities	99	98	101	107
No. of municipally and Ministry operated communal water supply facilities	471	463	476	472
No. of privately operated communal water supply facilities (est.)	1,728	1,351	1,725	1,354
No. of private water wells (est.)	N/A	700,000	N/A	700,000
No. of contaminants of concern which may occur in drinking water in Ontario (est.)	400	400	400	400

RESULTS

Results indicators are available only to a limited extent for privately operated communal water supply facilities. There is no comprehensive regulatory program for these facilities, although complaints are investigated. Except where otherwise noted, the results below apply only to municipally and Ministry operated facilities.

Operational Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of municipally and Ministry operated facilities assessed for compliance with basic drinking water quality objectives*	465 (99%)	444 (96%)	475 (100%)	455 (96%)
No. of privately operated facilities assessed for compliance with basic drinking water quality objectives	381 (22%)	470 (35%)	364 (21%)	388 (29%)
No. of new or revised drinking water standards or guidelines established (cumulative total)	0	10	46	37
No. of enforcement investigations related to water supply compliance	N/A	2	N/A	27
No. of Certificates of Approval issued	844	995	N/A	1,286

The laboratory testload associated with the analysis of drinking water samples is provided in Appendix A.

The Ministry introduced a new Drinking Water Surveillance Program (DWSP) in 1985-86 for the on-going measurement and monitoring of drinking water in the Province for a wider range of tests including approximately 140 microbiological, organic and inorganic parameters. In the long term, the program will cover all municipally and Ministry operated facilities in Ontario.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of facilities monitored under DWSP	0	13	35	41

The facilities monitored under DWSP are listed in Appendix B.

---

* Basic drinking water quality objectives: Turbidity, Colour, Chlorine Residual, Fluoride, Microbiological Quality. Assessment of microbiological quality is based on one or more samples per week. Assessment of the other four basic parameters is based on annual averages.

Program Outputs

Municipally and Ministry Operated Facilities:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed facilities meeting basic drinking water quality objectives	337 (72%)	333 (75%)	396 (83%)	341 (75%)
No. of assessed facilities meeting health related drinking water quality objectives*	---------- New Indicator ----------			431 (86%)
No. of boil water orders issued by Health Units	9	3	N/A	2
No. of problems resolved during year or with remedial measures under way at year-end at assessed facilities not fully meeting basic drinking water quality objectives*	116 (77%)	106** (68%)	49 (61%)	146 (86%)

Privately Operated Facilities:

No. of assessed facilities meeting basic drinking water quality objectives	252 (66%)	293 (62%)	256 (70%)	243 (63%)
No. of boil water orders issued by Health Units	18	64	N/A	9
No. of charges laid related to water treatment compliance	N/A	2	N/A	9
No. of convictions obtained related to charges laid	N/A	0	N/A	4

---

* All health-related problems were resolved during the year or had remedial measures under way at year-end. Where no remedial measures were underway the problems were either of an aesthetic nature or the project was halted due to funding limitations.

** Figure revised from 1987-88 Planned Results report.

Private Wells:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of households with contaminated private wells which were supplied with bottled water	N/A	36	N/A	51
No. of households with contaminated private wells which were connected to alternative water supplies	N/A	207	N/A	101

A summary of the failures identified and the remedial measures initiated for water supply facilities is provided in Appendix C.

Program Effects

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Population serviced by assessed facilities meeting basic drinking water quality objectives	7,100,000	6,900,000	7,550,000	7,000,000
Population serviced by assessed facilities not fully meeting health-related drinking water quality objectives	---------- New Indicator ----------			34,000

EFFICIENCY

Operational Efficiency

No. of municipally and Ministry operated facilities assessed for compliance with basic drinking water quality objectives per person-year	5.5	4.7	4.9	4.3

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Program Efficiency	Indicators not developed			
EFFECTIVENESS				
% of overall capacity of assessed municipally and Ministry operated facilities meeting basic drinking water quality objectives	91%	93%	96%	94%
RESOURCES				
. Expenditures ($000s)	4,498	6,340	6,019	7,374
. Person-Years	84	95	96	106

MBR PROJECT ON THE OPERATION OF MINISTRY WATER SUPPLY FACILITIES

OBJECTIVE

To operate water supply facilities on behalf of municipalities in Ontario and to undertake any in-plant remedial measures required to provide sufficient quantities of safe water.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to the provision of operating agreements,
- the person-years and budget of the Laboratory Services Branch related to the provision of tests of drinking water quality and the development of analytical techniques for measuring contaminants in drinking water,
- the person-years and budgets of the Regions required to operate and manage Ministry-owned water supply facilities,
- the person-years and budget of the Financial and Capital Management Branch associated with the collection of operating revenues and the establishment of water rates, and
- the person-years and budget of the Project Engineering Branch related to the provision of operational support to Ministry water supply facilities.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Ministry operated water supply facilities	99	98	101	107

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of water supply facilities and systems transferred from MOE to municipalities	4	0	N/A	1
No. of water supply facilities and systems transferred from municipalities to MOE	1	3	3	3

RESULTS

Operational Outputs

Pumpage (10^3 m^3/d)	657	700	682	727
No. of facilities assessed for compliance with basic drinking water quality objectives* and water quantity demands	97 (98%)	95 (97%)	100 (99%)	107 (100%)

The laboratory testload associated with the analysis of samples from Ministry facilities is provided in Appendix A.

---

* Basic drinking water quality objectives: Turbidity, Colour, Chlorine Residual, Fluoride and Microbiological Quality. Assessment of microbiological quality is based on one or more samples per week. Assessment of the other four basic parameters is based on annual averages.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed facilities meeting basic drinking water quality objectives and water quantity demands	63 (65%)	63 (66%)	85 (85%)	68* (64%)
No. of problems resolved during the year or with remedial measures under way at year-end at facilities not fully meeting basic drinking water quality objectives or water quantity demands	12 (50%)	22 (63%)	11 (58%)	36* (71%)

Of the 107 water supply facilities being operated by the Ministry in 1986-87, 29 facilities did not fully meet basic drinking water quality objectives and 10 failed water quantity objectives. At the 39 failing facilities, 51 different problems were identified, 36 of which had remedial actions undertaken. All health-related problems were resolved during the year or had remedial measures under way at year-end. Where no remedial measures were under way in 1986-87, the problems were either of an aesthetic nature or the project was halted due to lack of funds. A summary of the failures identified and remedial measures initiated for Ministry water supply facilities is provided in Appendix C.

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* Figures revised from 1986-87 Summary Report.

Program Effects

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Population serviced by assessed facilities meeting basic drinking water quality objectives	1,220,000	1,090,000	1,513,000	1,100,000
Population serviced by assessed facilities not fully meeting health-related drinking water quality objectives	N/A	N/A	N/A	4,535
No. of facilities with outstanding appeals against water rates	9	9	0	1
Estimated cost to resolve appeals ($000s)	10,344	6,332	0	0
No. of facilities for which additional assistance is required to resolve problems related to water service costs	N/A	30	0	4
Estimated cost to resolve problems ($000s)	N/A	38,796	0	23,821
No. of facilities for which revenue loss due to constraints in water rates is being written off	N/A	44	0	1
Estimated cost of write-offs ($000s)	N/A	1,190	0	29

Sufficient quantities of communally supplied water support continued growth of the provincial economy, including the development of new housing.

EFFICIENCY

Operational Efficiency

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Cost/m^3 drinking water (¢/m^3)	10.4	11.5	12.1	11.8
Pumpage/person-year (10^3 m^3/d)	2.6	2.6	2.4	2.8

Program Efficiency

Indicators not developed

EFFECTIVENESS

% of overall capacity of assessed facilities meeting basic drinking water quality objectives	95%	96%	98%	95%

RESOURCES

. Expenditures ($000s)	24,913	29,283	30,195	30,149
. Person-Years	254	265	279	262
. Revenue ($000s)	44,453	49,659	42,500	48,163

MBR PROJECT ON WATER SERVICING INFRASTRUCTURE

OBJECTIVE

To assist municipalities in Ontario with the construction of private or communal water infrastructure in order to provide safe drinking water, solve water supply problems, increase the supply of serviced lots and provide for urban growth.

DESCRIPTION

The resources assigned to this MBR project include:

- the Ministry's capital budgets for water servicing infrastructure development,
- funds for the repair of concrete water tanks,
- the person-years and budget of the Legal Services Branch related to the development of agreements with municipalities for the provision of water servicing infrastructure,
- the person-years and budget of the Water Resources Branch related to the provision of hydrologic information,
- the person-years and budgets of the Environmental Approvals and Land Use Planning Branch and of the Regions related to the preliminary development stages and the approval stages of water servicing projects,
- the person-years and budget of Financial and Capital Management Branch associated with capital expenditure control, revenue collection and rate reviews, and
- the person-years and budget of the Project Engineering Branch associated with the engineering and construction of provincial water servicing facilities and systems, and with grants administration.

SCOPE

Program clients include all municipalities with population densities sufficient to justify a communal water servicing infrastructure and municipalities with widespread private well contamination problems which cannot be resolved by individual actions.

RESULTS

Operational Outputs

	1984-85		1985-86		1986-87 Planned		1986-87 Actual	
	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed
No. of projects:								
. Disbursement	7	9	9	5	4	11	18	13
. Up-Front Grant	83	73	180	79	161	160	258	111
. Low Cost Alternative	29	23	33	11	17	26	36	22
	119	105	222	95	182	197	312	146

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of urban expansion needs, water quality problems and water supply problems identified as requiring capital expenditures for correction*:				
. Resolved during the year by project completions	164	96	186	170
. Addressed during year but incomplete at year-end	201	242	209	167
. Not being addressed within funding allocation	393	237	38	225
	758	575	433	562

A detailed breakdown of the status of problems is provided in Appendix D.

---

* A need or problem is considered identified when submissions by municipalities to MOE have been approved as being eligible for grants.

Program Effects

The overall adequacy of the Province's water servicing infrastructure is indicated below.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Infrastructure capacity (maximum daily pumpage 10^3 m^3/d)	9,700	9,900	9,700	10,200
Water demands (average daily pumpage 10^3 m^3/d)	4,550	4,600	4,625	4,510

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	76,496	72,007	44,448	49,270*
. Person-Years	52	48	51	47
. Revenue ($000s)	18,278	8,800	10,000	23,523

---

* The expenditures decrease between 1985-86 and 1986-87 is mainly attributable to the deferring of capital construction by the larger municipalities and regional municipalities.

MBR PROJECT ON THE REGULATION OF COMMUNAL SEWAGE TREATMENT FACILITY DISCHARGES

OBJECTIVE

To regulate communal sewage treatment facilities in Ontario in order to limit their discharges to quantities and rates that will protect the natural environment, human health and well-being and which will allow the greatest number of beneficial water uses.

DESCRIPTION

The resources assigned to this MBR project include:

- the budget of the Policy and Planning Branch related to sewage treatment facility research,
- the person-years and budget of the Legal Services Branch related to legal actions against sewage treatment facility owners for polluting water courses,
- the person-years and budget of the Water Resources Branch related to sewage treatment discharge policies and planning, the evaluation of sewage treatment processes and technology, and the resolution of operating problems at sewage facilities,
- the person-years and budget of the Laboratory Services Branch related to testing sewage treatment facility effluents and downstream water quality,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the review or establishment of standards for sewage treatment facility discharges,
- the person-years and budget of the Investigations and Enforcement Branch related to the investigations and enforcement of regulations and legislation pertaining to sewage treatment,
- the person-years and budgets of the Regions related to the inspection of sewage treatment facilities and the regulation of their discharges,
- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the certification of sewage treatment facilities, and

. the person-years and budget of the Project Engineering Branch related to the provision of technical assistance to operating authorities.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of municipally operated sewage treatment facilities	171	171	178	169
No. of Ministry operated sewage treatment facilities	229	232	233	238
No. of municipally and Ministry operated sewage treatment facilities	400	403	411	407
No. of privately operated communal sewage treatment facilities with discharges to surface waters	139	136	131	158

MAGNITUDE OF DISCHARGES

Total discharges of suspended solids, oxygen demand and phosphorus (Mg/d)*	188	198	192	190

RESULTS

The results presented below relate mainly to municipally and Ministry operated sewage treatment facilities which discharge to surface waters. Information on privately operated communal sewage treatment facilities with discharges to surface waters is limited. Except where otherwise noted, data presented below relate to municipally and Ministry operated facilities. Discharges from private facilities are believed to be of minor consequence.

---

* 1 Mg = 1 tonne.

Operational Outputs

The Ministry is developing a Municipal-Industrial Strategy for Abatement (MISA) for controlling municipal sewage and industrial wastewater discharges to surface waters. Monitoring Regulations and Effluent Limits Compliance Regulations will be promulgated for all major industries and for municipally and Ministry operated sewage treatment facilities by the end of 1991.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of municipally and Ministry operated facilities assessed for compliance with effluent requirements*	400 (100%)	393 (98%)	409 (99%)	398 (98%)
No. of privately operated facilities assessed for compliance with effluent requirements*	90 (65%)	86 (63%)	106 (81%)	98 (62%)
No. of enforcement investigations related to sewage treatment compliance	N/A	4	N/A	47
No. of Certificates of Approval issued	1,173	1,292	1,175	1,831

The laboratory testload associated with the analysis of samples from communal sewage treatment facilities is provided in Appendix A.

---

* In 1986-87, effluent requirements at sewage treatment facilities were based on annual average levels of BOD_5 and suspended solids and on monthly average levels of total phosphorus. In prior years, effluent requirements were based on annual average levels of BOD_5, suspended solids and total phosphorus. Effluent requirements differ between types of treatment facilities and sometimes also differ on a location specific basis. Detailed information on required effluent levels is provided in Appendix E.

Program Outputs

Municipally and Ministry Operated Facilities:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed facilities in compliance with effluent requirements	309 (77%)	293 (75%)	390 (95%)	303 (76%)
No. of problems resolved during year or with remedial measures under way at year-end at facilities not in compliance with effluent requirements*	156 (90%)	124 (79%)	40 (85%)	121 (92%)

A summary of the failures identified and remedial measures initiated for sewage treatment facilities is provided in Appendix C.

Privately Operated Facilities:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed facilities in compliance with effluent requirements	85 (95%)	82 (95%)	105 (99%)	87 (89%)
No. of charges laid related to sewage treatment compliance	N/A	6	N/A	60
No. of convictions obtained related to charges laid	N/A	0	N/A	6

---

* Where no remedial measures were underway the problems were either of an aesthetic nature or the project was halted due to funding limitations.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Program Effects				
Population serviced by assessed municipally and Ministry operated facilities meeting effluent requirements*	4,640,000	3,550,000	6,520,000	4,590,000

Inadequate treatment may alter the quality of the receiving waters into which sewage effluents are discharged. The figures below enumerate the tertiary watersheds affected by local sewage treatment facility discharges. Detailed statistics on the 144 tertiary watersheds in the Province are provided in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of tertiary watersheds with surface waters affected by sewage treatment facility discharges	36 (25%)	39 (27%)	36 (25%)	37 (26%)

Environmental effects resulting from sewage treatment facility effluent discharges include:

- reduced in-stream oxygen levels,
- excessive aquatic growth and poor aesthetics, and
- bacterial or viral contamination.

---

* Significant variations may occur from year to year as a result of the marginal compliance/non-compliance status of several large sewage treatment facilities which discharge to the Great Lakes.

Localized downstream impacts in watersheds receiving sewage treatment facility effluents are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas unsuitable for drinking water supply	5	5	5	5
No. of watersheds with areas requiring high water treatment costs	5	5	5	5
No. of watersheds with areas unsuitable for contact recreation	17	18	17	19
No. of watersheds with areas of reduced amenity for non-contact recreation	7	7	7	7
No. of watersheds with areas of poor quality or reduced fishing	22	25	22	22
No. of watersheds with downstream damages to special or unique features	3	4	3	4
No. of watersheds with areas unsuitable for livestock watering	1	1	1	1

In 18 of the watersheds, remedial measures or studies were being undertaken in 1986-87 to remedy water quality problems.

Treatment of sewage leaves a residual sludge which requires disposal. The breakdown of sludge quantities by type of disposal is provided below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of sludge generated (10^3 Mg/yr)	6,300	6,300	6,500	6,400

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of sludge placed in drying beds or municipal landfill (10^3 Mg/yr)*	1,500	1,400	600	1,700
Quantity of sludge incinerated (10^3 Mg/yr)**	3,100	3,500	4,300	3,600
Quantity of sludge utilized on agricultural land, composted, or used for mine tailings rehabilitation (10^3 Mg/yr)***	1,700	1,300	1,500	1,000
Quantity of sludge disposed of through other means (10^3 Mg/yr)	N/A	100	100	100

EFFICIENCY

Operational Efficiency

No. of municipally and Ministry operated facilities assessed per person-year	5.3	6.3	6.6	5.5

Program Efficiency — Indicators not developed

---

* Refer to the MBR Project on the Management of Municipal Wastes Directed to Landfill for information on landfill sites.

** Refer to the MBR Project on the Management of Point Sources of Air Pollution for information on incineration.

*** Refer to the MBR Project on the Utilization of Sewage Sludge and the Management of Subsurface Sewage Systems for information on sludge utilization.

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
% of overall capacity of assessed municipally and Ministry operated facilities in compliance with effluent requirements	65%	53%	93%	68%

RESOURCES

. Expenditures ($000s)	4,159	4,975	3,658	7,747*
. Person-Years	76	62	62	73*
. Revenue ($000s)	513	155	400	951

---

* The increase in resources between 1985-86 and 1986-87 is mainly attributable to increases in planning, monitoring and abatement activities associated with municipal sewage discharges.

MBR PROJECT ON THE OPERATION OF MINISTRY SEWAGE TREATMENT FACILITIES

OBJECTIVE

To operate sewage treatment facilities on behalf of municipalities in Ontario and to undertake any in-plant remedial measures required in order to meet sewage effluent requirements.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to the provision of operating agreements,
- the person-years and budget of the Water Resources Branch related to the resolution of operating problems at Ministry sewage treatment facilities,
- the person-years and budget of the Laboratory Services Branch related to testing sewage treatment facility effluents and downstream water quality,
- the person-years and budgets of the Regions required to operate and manage Ministry-owned sewage treatment facilities,
- the person-years and budget of the Financial and Capital Management Branch associated with the collection of operating revenues, and
- the person-years and budget of the Project Engineering Branch related to the provision of operational support to Ministry sewage treatment facilities.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Ministry operated sewage treatment facilities	229	232	233	238
No. of sewage treatment facilities and systems transferred from MOE to municipalities	0	0	2	1
No. of sewage treatment facilities and systems transferred from municipalities to MOE	4	4	1	2

RESULTS

Operational Outputs

Flow (10^3 m^3/d)	1,040	1,100	1,085	1,140
No. of facilities assessed for compliance with effluent requirements*	229 (100%)	232 (100%)	231 (99%)	238 (100%)

The laboratory testload associated with the analysis of samples from Ministry facilities is provided in Appendix A.

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* In 1986-87 effluent requirements at sewage treatment facilities were based on annual average levels of BOD_5 and suspended solids and on monthly average levels of total phosphorus. In prior years, effluent requirements were based on annual average levels of BOD_5, suspended solids and total phosphorus. Effluent requirements differ between types of treatment facilities and sometimes also differ on a location specific basis. Detailed information on required effluent levels is provided in Appendix E.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed facilities in compliance with effluent requirements	181 (79%)	179 (77%)	219 (95%)	174* (73%)
No. of problems resolved during the year or with remedial measures under way at year end at facilities not in compliance with effluent requirements	70 (85%)	67 (74%)	26 (90%)	108** (93%)

Of the 238 Ministry sewage treatment facilities that were operating in 1986-87, 64 were identified as not meeting effluent requirements. At the failing facilities, 116 different problems were identified, 108 of which had remedial actions undertaken. Where no remedial measures were under way in 1986-87, the problems were either of an aesthetic nature or the project was halted due to lack of funds. A summary of the failures identified and remedial measures initiated for Ministry sewage treatment facilities is provided in Appendix C.

Program Effects

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Population serviced by assessed facilities in compliance with effluent requirements	1,300,000	1,320,000	1,570,000	1,256,700

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* The reduction in compliance between 1985-86 and 1986-87 is mainly attributable to the large number of MOE operated sewage lagoons which failed to meet the new monthly average discharge requirements for total phosphorus.

** Figures revised from 1986-87 Summary Report.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of facilities with outstanding appeals against sewage rates	3	4	0	1
Estimated cost to resolve appeals ($000s)	1,374	1,647	0	0
No. of facilities for which additional assistance is required to resolve problems related to sewage service costs	N/A	41	0	10
Estimated cost to resolve problems ($000s)	N/A	131,885	0	2,644
No. of facilities for which revenue loss due to constraints in sewage rates is being written off	N/A	87	0	2
Estimated cost of write-offs ($000s)	N/A	4,085	0	22

Adequate sewage capacity supports continued growth of the provincial economy, including the development of new housing.

EFFICIENCY

Operational Efficiency

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Cost/m^3 sewage (¢/m^3)	11.1	11.8	12.9	10.9
Flow processed/person-year (10^3 m^3/d)	2.1	2.3	2.3	2.3

Program Efficiency

Indicators not developed

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
% of overall capacity of assessed facilities in compliance with effluent requirements	81%	85%	99%	75%

RESOURCES

. Expenditures ($000s)	42,389	47,574	51,281	45,064
. Person-Years	501	488	465	496
. Revenue ($000s)	66,976	76,550	72,500	72,248

MBR PROJECT ON SEWAGE SERVICING INFRASTRUCTURE

OBJECTIVE

To assist municipalities in Ontario with the construction of private or communal sewage infrastructure in order to prevent public health and environmental pollution problems, increase the supply of serviced lots, and provide for urban growth.

DESCRIPTION

The resources assigned to this MBR project include:

- the Ministry's capital budgets for sewage servicing infrastructure development,
- the person-years and budget of the Legal Services Branch related to the development of agreements with municipalities for the provision of water servicing infrastructure,
- the person-years and budget of the Water Resources Branch for beaches protection studies,
- the person-years and budgets of the Environmental Approvals and Land Use Planning Branch and of the Regions related to the preliminary development stages and the approval stages of sewage servicing projects,
- the person-years and budget of the Financial and Capital Management Branch associated with capital expenditure control, revenue collection and rate reviews, and
- the person-years and budget of the Project Engineering Branch associated with the engineering, construction and commissioning of provincial sewage treatment facilities and systems, and grants administration.

SCOPE

Program clients include all municipalities with population densities sufficient to justify a communal sewage servicing infrastructure and municipalities with widespread septic tank defects that cannot be resolved by individual actions.

RESULTS

Operational Outputs

	1984-85		1985-86		1986-87 Planned		1986-87 Actual	
	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed	Ongoing	Completed
No. of projects:								
. Disbursement	14	12	9	11	8	15	30	20
. Up-Front Grant	83	60	168	60	138	133	201	87
. Low Cost Alternative	25	18	18	6	8	26	33	21
	122	90	195	77	154	174	264	128

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of urban expansion needs and water quality problems identified as requiring capital expenditures for correction*:				
. Resolved during the year by project completions	146	96	247	168
. Addressed during year but incomplete at year-end	158	258	157	175
. Not being addressed within funding allocation	374	180	37	147
	678	534	441	490

A detailed breakdown of the status of problems is provided in Appendix D.

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* A need or problem is considered identified when submissions by municipalities to MOE have been approved as being eligible for grants.

Program Effects

The overall adequacy of the Province's sewage servicing infrastructure is indicated below.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Infrastructure capacity (maximum daily flow 10^3 m^3/d)	6,000	6,000	6,100	6,000
Service demands (average daily flow 10^3 m^3/d)	4,800	4,900	4,900	5,300

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	86,169	80,603	77,328	66,116*
. Person-Years	59	53	66	49
. Revenue ($000s)	61,813	43,477	20,000	42,719

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* The expenditures decrease between 1985-86 and 1986-87 is mainly attributable to the deferring of capital construction by the larger municipalities and regional municipalities.

MBR PROJECT ON SURFACE WATER AND GROUNDWATER QUANTITY MANAGEMENT

OBJECTIVE

To regulate the water well industry and major water withdrawers in Ontario so as to provide for the fair sharing and conservation of the available surface water and groundwater.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to the development of legislation and regulations concerning water quantity management, and prosecutions of well drillers and water drawers under the Ontario Water Resources Act,
- the person-years and budget of the Water Resources Branch related to the administration of the water-taking permit program, the provision of hydrologic information, the maintenance of the hydrologic network, and program planning,
- the person-years and budget of the Investigations and Enforcement Branch related to the investigations of violations and enforcement of regulations and legislation pertaining to water-taking, and
- the person-years and budgets of the Regions related to the issuing of water-taking permits, the assembling of water use information, the auditing of well construction contractors, the monitoring of streamflow and the investigation of public complaints concerning water use interferences.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of water well contractors and technicians	450	385	350	631*

* Well technician licences were not required until April 1, 1986.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of major water-taking permit holders:*				
. Agricultural	3,018	3,012	4,150	3,012
. Industrial/Commercial	718	769	740	860
. Municipal	761	755	790	807
. Recreational	808	764	530	863
	5,305	5,300	6,210	5,542

RESULTS

Operational Outputs

No. of new applications for contractor and technician licences processed	10	8	10	698**
No. of contractor and technician licences issued	450	385	350	631**
No. of water-taking permits:				
. Renewed	259	320	259	233
. Issued	231	231	230	261
. Expired and not renewed	270	91	270	71
. Cancelled	97	67	95	50
	857	709	854	615

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* Major water withdrawers who initiated water-takings prior to 1961 are not included.

** Well technician licences were not required until April 1, 1986.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of enforcement investigations related to well drilling/water-taking compliance	N/A	0	N/A	75
No. of charges laid related to well drilling/water-taking compliance	N/A	0	N/A	107
Program Outputs				
No. of well contractor and technician licences withdrawn due to poor performance	0	0	0	0
No. of new water wells installed	8,155	9,853	8,500	11,448
No. of new water wells inspected	2,049	2,000	2,200	N/A
Maximum daily water usage authorized (10^6 m^3/d):				
. Agricultural	4.0	3.0	4.0	3.0
. Industrial/Commercial	190.0	144.0	190.0	146.0
. Municipal	2.0	1.6	2.0	1.7
. Recreational	2.0	3.1	2.0	3.1
	198.0	151.7	198.0	153.8
No. of individual water use conflicts:				
. Resolved during the year	91	35	N/A	50
. Outstanding at year-end	37	20	N/A	120
No. of water-taking permit holders using excessive quantities of water	N/A	24	24	108
No. of convictions obtained related to charges laid	N/A	7	N/A	64

Program Effects

For each of the 144 tertiary watersheds in the Province, the major water uses, problems associated with these uses, the environmental effects and the major impacts are identified in Appendix H.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with major water use problems	36 (25%)	35 (24%)	35 (24%)	35 (24%)

The major impacts resulting from excessive water withdrawals in the affected watersheds are summarized below. Some watersheds have several impacts.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with limitations on additional water use	16	22	15	19
No. of watersheds with damage or alteration to special or unique features resulting from low flows	2	10	2	11
No. of watersheds having interference with water withdrawals	17	24	16	22
No. of watersheds having interference with in-stream water uses	5	11	5	18
No. of watersheds with other impacts	4	7	4	7

In 1986-87, assessment monitoring or studies were being undertaken in 24 of the 35 affected watersheds to investigate solutions to water quantity problems.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
EFFICIENCY	Indicators not developed			
EFFECTIVENESS	Indicators not developed			
RESOURCES				
. Expenditures ($000s)	1,297	1,393	1,283	1,511
. Person-Years	25	25	22	24
. Revenue ($000s)	1	7	6	18

MBR PROJECT ON THE MANAGEMENT OF INDUSTRIAL AND COMMERCIAL POINT SOURCES OF WATER POLLUTION

OBJECTIVE

To manage the discharge of industrial and commercial point sources of water pollution in Ontario at quantities and rates that will protect the natural environment, human health and well-being and that will allow the greatest number of beneficial water uses.

DESCRIPTION

The resources assigned to this MBR project include:

- the budget of the Policy and Planning Branch related to the provision of research funding concerning industrial wastewater discharges and their effects,
- the person-years and budget of the Legal Services Branch related to the legal actions against industries concerning water pollution,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to industrial point source water pollution issues,
- the person-years and budget of the Water Resources Branch related to the development of policies and plans for the control of industrial wastewater discharges, the evaluation of industrial technologies, and the provision of assistance to the Regions on industrial wastewater issues,
- the person-years and budget of the Laboratory Services Branch related to the testing of surface water and groundwater samples for industrial and commercial pollutants, and the development of analytical techniques for measuring industrial pollutants in water and in the aquatic ecosystem,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the review or establishment of standards for pollutants in industrial wastewater,
- the person-years and budget of the Office of the A.D.M., Operations Division, related to the management of industrial water pollution issues,

- the person-years and budget of the Intergovernmental Relations and Strategic Projects Division related to the investigation of industrial wastewater discharges into the Niagara, Detroit, St. Clair and St. Mary's Rivers and Lake St. Clair,

- the person-years and budget of the Investigations and Enforcement Branch related to investigations and enforcement of sources in non-compliance with industrial wastewater discharge objectives,

- the person-years and budgets of the Regions related to the inspection, monitoring, and regulation of industrial sources of water pollution, the resolution of complaints regarding industrial water pollution and the inspection and monitoring of commercial marinas,

- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the review of applications for Certificates of Approval for industrial discharges and for policy reviews, administration and co-ordination of marina inspections, and

- the person-years and budget of the Spills Action Centre related to the development of emergency response capabilities and plans and the response to industrial spills.

(1) INDUSTRIAL POINT SOURCE DISCHARGES

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of industrial point sources in Ontario	12,000	12,000	12,000	12,000
No. of industrial facilities with direct discharges to surface waters under MBR reporting	109	102	104	124
No. of water contaminants of concern (est.)	400	400	400	400
No. of water contaminants under MBR reporting	18	22	21	24
No. of spills (est.)	N/A	5,000	N/A	5,200

MAGNITUDE OF DISCHARGES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total discharges of suspended solids, oxygen demand and phosphorus (Mg/d)**	550 (87)*	480 (96)*	510 (97)*	450 (98)*

These numbers make no sense. The discharge from one large pulp + paper mill will exceed 450 tonnes. Daily, perhaps?

RESULTS

Operational Outputs

The Ministry is developing a Municipal-Industrial Strategy for Abatement (MISA) for controlling municipal sewage and industrial wastewater discharges to surface waters. Monitoring Regulations and Effluent Limits Compliance Regulations will be promulgated for all major industries and for municipally and Ministry operated sewage treatment facilities by the end of 1991.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of industrial points assessed for compliance with existing objectives***	284 (95%)	340 (91%)	287 (85%)	347 (91%)
No. of enforcement investigations related to industrial wastewater discharge compliance	N/A	45	N/A	85

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* No. of major industrial point sources contributing to total discharge figures.

** 1 Mg = 1 tonne.

*** A point is considered as a single parameter monitored in the discharge from an industrial facility.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Certificates of Approval issued	79	55	80	104
No. of chemical compounds assessed for ambient water quality standard setting purposes:				
. New guidelines or objectives assessed	N/A	N/A	N/A	31
. Old guidelines or objectives reviewed	N/A	23	N/A	0
. Guidelines or objectives approved	N/A	17	N/A	11
No. of chemical compounds assessed for multi-media standard setting purposes	20	16	45	16
No. of scientific criteria documents completed	1	0	0	0
% of spills involving field responses (est.)	N/A	80-90%	N/A	80-90%
No. of notices of loss received under Part IX, Environmental Protection Act (E.P. Act)	N/A	14	N/A	75
No. of applications for compensation processed under Part IX, E.P. Act	N/A	0	N/A	2
No. of projects to which the Environmental Security Account is applied	N/A	16	15	42

The laboratory testload associated with the analysis of samples related to industrial point sources of water pollution is provided in Appendix A.

Program Outputs

The wastewater discharges to watercourses of 13 industrial sectors are evaluated relative to existing Ministry objectives. The 13 industrial sectors include:

- Iron and Steel Mills,
- Pulp and Paper Mills,
- Petroleum Refining,
- Metal Mining,
- Non-Ferrous Smelting and Refining,
- Fish Products Industry,
- Plastics and Synthetic Resins Manufacturing,
- Industrial Chemicals Manufacturing,
- Abrasives Manufacturing,
- Automotive Manufacturing,
- Meat Processing,
- Poultry Processing, and
- Miscellaneous Manufacturing.

The industrial facilities under MBR reporting within each of the industrial sectors are identified in Appendix I.

A facility is identified as being substantially in compliance with a particular environmental objective either if an analysis of an adequately defined data base indicates compliance, or if there is an absence of other information that would be indicative of a non-compliance situation.

The evaluation is not intended to identify short-term failures to meet objectives. Therefore, environmental damages and nuisance conditions may still occur when facilities are in "substantial compliance".

The detailed MBR evaluation of industrial facilities is provided in Appendix J.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
	9 Sectors	13 Sectors	14 Sectors	13 Sectors
No. of assessed points in compliance with existing objectives	226 (80%)	258 (76%)	256 (89%)	283 (82%)
No. of assessed points not in compliance with existing objectives, but with abatement plans	42 (15%)	76 (22%)	17 (6%)	36 (10%)
No. of assessed points not in compliance with existing objectives, and without abatement plans	16 (5%)	6 (2%)	14 (5%)	28 (8%)
	284	340	287	347

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of charges laid for industrial sources not in compliance with industrial wastewater discharge objectives	N/A	156	N/A	113
No. of convictions obtained related to charges laid	N/A	8	N/A	30

Program Effects

The figures below enumerate the tertiary watersheds affected by direct industrial discharges. Detailed statistics on the 144 tertiary watersheds in the Province are given in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of tertiary watersheds affected by direct industrial discharges:				
. Surface Water	36 (25%)	39 (27%)	35 (24%)	39 (27%)
. Groundwater	3 (2%)	3 (2%)	0 (0%)	2 (1%)

The environmental effects resulting from direct industrial discharges include:

- reduced in-stream oxygen levels;
- nutrient enrichment, excessive aquatic growth and reduced aesthetics;
- bacterial or viral contamination;
- destruction of fish habitat, fish toxicity and fish contamination; and
- contamination of terrestrial vegetation and crops.

Localized impacts in the tertiary watersheds receiving direct industrial discharges are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas unsuitable for drinking water supply:				
. Surface Water	6	6	6	6
. Groundwater	1	1	1	1
No. of watersheds with areas unsuitable for contact recreation	7	8	7	7
No. of watersheds with areas of reduced amenity for non-contact recreation	12	15	12	9
No. of watersheds with areas of poor quality or reduced fishing	33	39	33	31
No. of watersheds with downstream damages to special or unique features	6	6	6	4
No. of watersheds with areas unsuitable for livestock watering	0	0	0	0
No. of watersheds with other impacts	1	1	1	2

In 1986-87, remedial measures or studies were being undertaken in 24 watersheds with water quality problems resulting from industrial discharges.

Appendix G also provides water quality data for each of the 11 secondary watersheds in the Province. The indicators of water quality used are:

- historical trends at water quality monitoring stations;
- recent changes at water quality monitoring stations in criteria exceedences of dissolved oxygen, total phosphorus, fecal coliforms, un-ionized ammonia, iron, and phenols; and
- water quality data for dissolved oxygen, total phosphorus, fecal coliforms, un-ionized ammonia, iron, and phenols.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
EFFICIENCY	Indicators not developed			
EFFECTIVENESS				
No. of industrial points in compliance with existing objectives as a % of total no. of points assessed	80%	76%	89%	82%
No. of industrial points not in compliance but with abatement plans as a % of the total no. of assessed points not in compliance	72%	93%	55%	56%
(2) COMMERCIAL MARINA POINT SOURCE DISCHARGES				
SCOPE				
No. of commercial marinas in Ontario	363	434	368	975
MAGNITUDE OF DISCHARGES	Data base not developed			
RESULTS				
Operational Outputs				
No. of inspections under the Environmental Protection Act, Reg. 310, of commercial marinas for pump-out facilities	70	320	261	372
No. of violations of Reg. 310 by commercial marinas	2	6	N/A	24

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of corrective actions undertaken without prosecution	3	6	N/A	10
No. of convictions obtained	0	0	0	0
Program Outputs	Indicators not developed			
Program Effects	Indicators not developed			
EFFICIENCY				
Operational Efficiency				
No. of corrective actions and convictions obtained as a % of the no. of violations of Reg. 310	N/A	100%	N/A	42%
EFFECTIVENESS	Indicators not developed			
RESOURCES				
. Expenditures ($000s)	7,117	8,350	23,386*	29,799*
. Person-Years	133	148	165	186
. Revenue ($000s)	0	999	400	946

* The planned and actual expenditures increase between 1985-86 and 1986-87 is mainly attributable to increases in planning, monitoring, abatement and analytical activities associated with industrial wastewater discharges.

MBR PROJECT ON THE MANAGEMENT OF NON-POINT SOURCES OF WATER POLLUTION

OBJECTIVE

To manage non-point sources of urban and agricultural drainage and wastewater discharges from pleasure boats in Ontario in order to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

The major non-point sources of water pollution are from urban and agricultural drainage. Regulatory capabilities equivalent to those which the Province has over major point sources are not appropriate for non-point sources either for technical or for socio-economic reasons.

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to prosecutions for spills and the review of non-point source water pollution control policies,
- the person-years and budget of the Water Resources Branch related to the development of policies for urban and stormwater runoff and agricultural pollution control and Great Lakes water quality monitoring,
- the person-years and budget of the Laboratory Services Branch related to the analysis of water samples from areas affected by non-point sources of water pollution,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the development of water quality objectives for recreational water uses,
- the person-years and budget of the Investigations and Enforcement Branch relating to the investigation of violations and enforcement of regulations and legislation pertaining to marinas and pleasure boats,
- the person-years and budgets of the Regions related to the maintenance of the water quality monitoring network and the collection of samples in areas affected by non-point sources of water pollution, the investigation of Regional water quality problems resulting from non-point source pollution, the inspection of pleasure boats for toilets, storage equipment and sewage discharges, and the administration of demonstration projects to reduce agricultural pollution,

. the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to stormwater sewer approvals and the administration and co-ordination of boat and marina inspections, and

. the person-years and budget of the Spills Action Centre relating to the development of emergency response capabilities and plans and the response to non-point source spills.

(1) URBAN RUNOFF AND STORMWATER MANAGEMENT

SCOPE

All urban municipalities.

MAGNITUDE OF DISCHARGES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Discharges* of suspended solids, oxygen demand and total phosphorus to Great Lakes (Mg/d)**	270	270	270	270
% of non-point discharges to Great Lakes resulting from:				
. Combined Sewer Overflows	22%	22%	22%	22%
. Urban Runoff	78%	78%	78%	78%

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* Estimates derived from PLUARG investigations of selected municipalities.

** 1 Mg = 1 tonne.

RESULTS

Operational Outputs

In Toronto, investigations of river and waterfront degradation from urban stormwater discharges and combined sewer overflows are under way in 1986-87. Particular emphasis has been placed on the Humber River and the Don River. Expected results include a cost-effective management plan for non-point source pollution, including heavy metals. The management plan for the Humber River watershed was released in the summer of 1986. Field investigations of the Don River watershed are under way.

In St. Catharines, preliminary investigations have identified stormwater discharges and combined sewer overflows as major contributors to river and beach degradation. A study developing a comprehensive pollution control plan is under way and some abatement actions have been initiated.

Pollution control plans for management of urban runoff and stormwater discharges are being developed for London, Windsor, Sarnia, Sault Ste. Marie and the Regional Municipality of Durham.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of projects conducted on inland recreational lakes	N/A	3	7	3
No. of chemical compounds assessed for ambient water quality standard setting purposes:				
. New guidelines or objectives assessed	N/A	N/A	N/A	31
. Old guidelines or objectives reviewed	1	23	0	0
. Guidelines or objectives approved		17		11
No. of scientific criteria documents completed	1	0	0	0

The laboratory testload associated with the analysis of samples related to non-point sources of water pollution is provided in Appendix A.

Program Outputs

Indicators not developed

Program Effects

The figures below enumerate the tertiary watersheds affected by urban runoff and stormwater discharges. Detailed statistics on the 144 tertiary watersheds in the Province are provided in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with surface waters affected by urban runoff/stormwater discharges	22 (15%)	24 (17%)	21 (15%)	22* (15%)

The environmental effects resulting from urban runoff and stormwater discharges include:

- reduced in-stream oxygen levels;
- nutrient enrichment, excessive aquatic growth, and reduced aesthetics;
- bacterial or viral contamination;
- water and sediment quality degradation; and
- destruction of fish habitat.

Localized downstream impacts in the tertiary watersheds receiving urban runoff and stormwater discharges are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas unsuitable for drinking water supply	1	1	1	3
No. of watersheds with localized areas requiring high water treatment costs	1	1	1	1
No. of watersheds with areas unsuitable for contact recreation	16	21	16	17

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* Figure revised from 1986-87 Summary Report.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with areas of reduced amenity for non-contact recreation	1	1	1	2
No. of watersheds with areas of poor quality or reduced fishing	12	14	12	14
No. of watersheds with other impacts	0	0	0	1

Studies or remedial measures were under way in eight watersheds to remedy problems associated with urban runoff/stormwater discharges in 1986-87.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

(2) AGRICULTURAL RUNOFF

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of farms (approx.)	82,400	82,200	82,200	81,500

MAGNITUDE OF DISCHARGES

Discharges of suspended solids and total phosphorus to Great Lakes (Mg/d)	2,900	2,900	2,900	2,900

RESULTS

Operational Outputs

In 1986-87, in the Holiday/Missouri Creek watershed, a modelling study of the fate and pathways of atrazine was under way.

Under the Provincial Beaches Program, Conservation Authorities were funded with MOE grants to undertake local soil conservation activities in eight priority watersheds in 1986-87.

Program Outputs

Indicators not developed

Program Effects

As a result of activities and publicity surrounding agricultural runoff pollution problems in Lake Simcoe, Rondeau Bay, the Thames and other southwestern Ontario rivers, farmers are becoming more aware of the needs to control agricultural runoff and erosion. A gradual improvement may be expected from future voluntary actions taken by farmers to control agricultural runoff.

The figures below indicate the tertiary watersheds affected by agricultural runoff. Detailed statistics on the 144 tertiary watersheds in the Province are provided in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of tertiary watersheds affected by agricultural runoff:				
. Surface Water	32 (22%)	34 (24%)	32 (22%)	33 (23%)
. Groundwater	13 (9%)	14 (10%)	13 (9%)	13 (9%)

The environmental effects resulting from agricultural runoff include:

- reduced in-stream oxygen levels;
- nutrient enrichment, excessive aquatic growth and reduced aesthetics;
- bacterial or viral contamination;
- pesticides and herbicides contamination; and
- destruction of fish habitat.

During 1986-87, 40 communal groundwater supplies or private wells were impaired by agricultural fertilizers or manure. Thirty-one problems were resolved during the year.

Localized impacts in the tertiary watersheds receiving agricultural runoff are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas unsuitable for drinking water supply:				
. Surface Water	0	0	0	12*
. Groundwater	12	14	12	13
No. of watersheds with areas of high water treatment costs:				
. Surface Water	6	6	6	18*
. Groundwater	11	12	11	12
No. of watersheds with areas unsuitable for contact recreation	8	7	8	16*
No. of watersheds with areas of reduced amenity for non-contact recreation	10	11	10	12

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* The increase between 1985-86 and 1986-87 is mainly attributable to improved data bases and reporting.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with areas of poor quality or reduced fishing	25	26	25	27
No. of watersheds with downstream damages to special or unique features	6	6	6	6
No. of watersheds with areas unsuitable for livestock watering	3	3	3	6

Studies or remedial measures were under way or completed during 1986-87 in one watershed to remedy groundwater problems associated with agricultural runoff.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

(3) PLEASURE BOAT WASTE DISCHARGES

SCOPE

All pleasure boats equipped with toilets and storage equipment for human excrement.

MAGNITUDE OF DISCHARGES

Data not available; discharges believed to be of minor impact.

RESULTS

Operational Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of inspections under the Environmental Protection Act, Reg. 310, of pleasure boats for toilets, storage equipment and sewage discharges	461	2,456	1,875	3,142
No. of violations of Reg. 310 by pleasure boats	16	151	N/A	274
No. of corrective actions undertaken without prosecution	3	147	N/A	226
No. of convictions obtained	4	4	N/A	0

Program Outputs

Indicators not developed

Program Effects

Indicators not developed

EFFICIENCY

Operational Efficiency

No. of corrective actions and convictions obtained as a % of the no. of violations of Reg. 310	44%	97%	N/A	82%

EFFECTIVENESS

Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	8,113	10,449	12,377	12,698
. Person-years	125	149	140	166
. Revenue ($000s)	684	207	400	1,287

MBR PROJECT ON THE MANAGEMENT OF TRANSBOUNDARY WATER POLLUTION

OBJECTIVE

To regulate Ontario sources of transboundary water pollution and to advocate and negotiate limits on transboundary pollution from outside of Ontario in order to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

Transboundary water pollution is assigned to a separate MBR project because of the special management problems it poses. Ministry influence over pollution originating outside of Ontario is limited to participation in the negotiation and implementation of national and international agreements, involvement in international/interjurisdictional committees or boards and intervention in legal proceedings.

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to Ontario's representation at U.S. Federal and State proceedings,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to transboundary water quality issues,
- the person-years and budget of the Water Resources Branch related to the support of international and Federal/Provincial water quality agreements, the assessment of transboundary water pollution, and the assessment of water quality in the Great Lakes, and the coordination of Remedial Action Plans for 17 Great Lakes areas of concern,
- the person-years and budget of the Laboratory Services Branch and Regional laboratories involving the analysis of water samples from the Great Lakes,
- the person-years and budget of the Office of the A.D.M., Intergovernmental Relations and Strategic Projects Division related to intergovernmental and transboundary water quality issues,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the development of water quality objectives and policies and plans for the management of transboundary water pollution,

- the person-years and budget of the Intergovernmental Relations Office related to intergovernmental water quality negotiations, the assessment of sources of pollution on the U.S. side of the Niagara, Detroit, St. Clair and St. Mary's Rivers and Lake St. Clair, and the development of Remedial Action Plans for four Great Lakes areas of concern,

- the person-years and budgets of the Regions related to the investigation of cases of transboundary water pollution affecting Ontario or U.S. water quality, and the development of Remedial Action Plans for Great Lakes areas of concern, and

- the person-years and budget of the Spills Action Centre related to the development of a co-ordinated, international emergency response capability for dealing with spills on the Great Lakes.

SCOPE

All non-Ontario sources of water pollution in watersheds shared with Ontario.

Sources of water pollution in Ontario directly or indirectly discharging to internationally shared watersheds.

RESULTS

Operational Outputs

International Initiatives (1986-87):

- Ontario continued its ongoing monitoring of discharges from industries and waste disposal sites along the Niagara River and also monitored industrial discharges from Massena, New York which contribute to PCB contamination in Lake St. Francis, Quebec, and occasionally in Ontario waters.

- Ontario continued to participate in the Upper Great Lakes Connecting Channels Study with the Canadian, U.S. and Michigan governments. Data were provided to joint projects/investigations.

- The Province cooperated with Quebec and the Council of Great Lakes Governors in the preparation of a Memorandum of Understanding regarding the management of toxic substances in the Great Lakes.

- The Province prepared an Environmental Accord with Michigan.

- The Province continued to liaise with federal officials on matters related to the Canada-Ontario Agreement Respecting Great Lakes Water Quality.

- The Province prepared assessments of the CECOS Necco Park, Niagara County, and Durez landfill sites in New York State and presented court submissions in New York State concerning the remediations of the S-area and Hyde Park landfills.

- The Province signed a Declaration of Intent with three other jurisdictions committing the parties to a 50% reduction of persistent toxic substances over a 10 year period (Niagara River Toxics Management Plan).

- The Province participated in the organization and presentation of papers at an international symposium on Niagara River issues.

- The Province initiated five Remedial Action Plans for international Great Lakes areas of concern.

- The Province maintained its commitments to the Upper Great Lakes Connecting Channels Study with Federal agencies (U.S. and Canadian) and Michigan. Data were provided to joint projects/investigations.

- Ontario continued to support committees of the International Joint Commission (IJC), including the Water Quality Board, and to provide coordinated responses on Great Lakes issues and the Commission's Biennial Report on the Great Lakes Water Quality Agreement. Representatives also attended meetings of and provided information to the Rainy River Board of Control of the IJC.

Provincial Initiatives (1986-87):

- The Province continued development and testing of a $1 million pilot scale granular activated carbon treatment system at the Niagara Falls, Ontario water treatment plant.

- The Province commenced Phases III, IV and V investigations into the potential contamination of the fresh water aquifer in Lambton County by deep well disposal operations.

- The Province assessed the waste disposal sites bordering the Upper Great Lakes Connecting Channels identified in previous inventories to determine the priorities for remedial work and for monitoring.

- The Province developed a plan to monitor leachates from the Algoma Steel slag disposal site.

- An air photo surveillance of industrial complexes and shorelines in Sarnia, Windsor and Sault Ste. Marie was undertaken to identify potential areas of unidentified point source discharges or leachate discharges.

- The Province undertook pilot site studies on the St. Clair and St. Mary's Rivers to support the development of MISA regulations for the iron and steel and organic chemical manufacturing sectors.

- The Province modified and tripled its monitoring of municipal and industrial sources of toxic contaminant discharge to the Niagara River in order to establish baseline concentrations for 1986-87 (as established in the Niagara River Toxics Management Plan).

- The Province conducted an evaluation of the third of five Ontario landfills identified in the Niagara River Toxics Committee Report.

- The Province undertook a compilation of water resources and geological information for the Niagara Peninsula.

- The Province established the Great Lakes Steering Committee to coordinate Ministry and inter-ministry input to the Great Lakes Water Quality Agreement and the Canada-Ontario Agreement.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of reviews of New York State and Michigan State Pollution Discharge Elimination System (SPDES) permits for municipal and industrial discharges	4	10	8	14
No. of evaluations of Ontario municipal and industrial discharges to the watersheds of the Niagara, Detroit, St. Clair and St. Mary's Rivers	35	35*	50	76
No. of evaluations of Ontario landfill sites in the watersheds of the Niagara, Detroit, St. Clair and St. Mary's Rivers	7	11	19	8

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* Figure revised from 1986-87 Summary Report.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of evaluations of New York State and Michigan State landfill sites in the watersheds of the Niagara, Detroit, St. Clair and St. Mary's Rivers	7	26	16	32

The laboratory testload associated with the analysis of samples related to the Ministry's Great Lakes Program and IJC commitments is provided in Appendix A.

Program Outputs

International Initiatives (1986-87):

- The collection and interpretation of data on point/non-point sources, groundwater and waste sites supported the establishment of sound objectives for enforcement by all jurisdictions involved in international boundary waters of the Upper Great Lakes Connecting Channels.
- The Declaration of Intent and the Niagara River Toxics Management Plan between Ontario, the New York State DEC, Environment Canada and the U.S. EPA established goals and timetables for the implementation of joint monitoring programs and action plans for the control of discharges of toxic contaminants into the Niagara River.
- The Province's interventions in the New York State hearings regarding the S-Area and Hyde Park landfill remediations were unsuccessful as the courts did not accept Ontario's approaches.
- Ontario and Michigan developed joint programs for the preparation of Remedial Action Plans for the St. Clair, Detroit and St. Mary's Rivers.
- Ontario completed individual investigative reports on the Upper Channels for inclusion in the Upper Great Lakes Connecting Channels Study.
- Ontario and Michigan agencies prepared inventories of landfill sites adjacent to the Upper Great Lakes Connecting Channels and ranked the potential impact of these sites.

Provincial Initiatives (1986-87):

- Project studies influenced design decisions to upgrade the Fort Erie sewage system; negotiations and preliminary designs are now under way.
- Project studies led to an investigative program approval of the Fourth Avenue landfill in Niagara Falls, Ontario.
- MOE assisted Brock University in the purchase and operation of a Mass Spectrophotometer for use in the identification of contaminants in the Niagara River.
- Point source sampling identified impacts of industrial operations in the St. Clair River with subsequent abatement efforts to better define contaminant discharges and appropriate remedial measures.
- A study of Scott Road landfill sites in Sarnia ascertained sources of contaminants in the Township Ditch.
- Research was undertaken to develop alternative methods for locating and assessing subsurface discharges of potentially contaminated leachates.

Program Effects

Tangible changes in international negotiation procedures, information flows and knowledge of the extent and sources of contamination, together with specific improvements to discharge permits and litigation documents have occurred. There is also an increased awareness in the U.S., at both Federal and State levels, that Ontario has real concerns about the water quality in the Niagara, Detroit, St. Clair and St. Mary's Rivers and is determined to protect its environmental interests.

The watersheds affected by transboundary water pollution have been enumerated below. Detailed water quality information on the 144 tertiary watersheds in the Province is provided in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with surface water pollution problems caused by specific non-Ontario sources	6 (4%)	6 (4%)	6 (4%)	6 (4%)

The environmental effects resulting from transboundary water pollution from non-Ontario sources include:

- fish contamination, destruction of fish habitat, and toxicity to fish;
- reduced in-stream oxygen levels;
- excessive aquatic growth and reduced aesthetics; and
- bacterial or viral contamination.

Localized impacts in the tertiary watersheds receiving transboundary water pollution from specific non-Ontario sources are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas with high water treatment costs	1	1	1	1
No. of watersheds with areas unsuitable for contact recreation	2	2	2	2
No. of watersheds with areas of reduced amenity for non-contact recreation	0	0	0	0
No. of watersheds with areas of poor quality or reduced fishing	6	6	6	6
No. of watersheds with areas unsuitable for livestock watering	0	0	0	0

In 1986-87, studies or remedial measures were undertaken in two watersheds to resolve problems associated with transboundary water pollution.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
EFFICIENCY	Indicators not developed			
EFFECTIVENESS	Indicators not developed			
RESOURCES				
. Expenditures ($000s)	2,679	2,985	2,942	4,066*
. Person-Years	49	52	46	50
. Revenue ($000s)	342	104	400	634

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* The expenditures increase between 1985-86 and 1986-87 is mainly attributable to increases in planning, monitoring and abatement activities associated with municipal sewage and industrial wastewater discharges to the Great Lakes and international waterways.

MBR PROJECT ON THE MANAGEMENT OF POINT SOURCES OF AIR POLLUTION

OBJECTIVE

To manage the emissions from point sources of air pollution in Ontario at quantities and rates that will protect the natural environment, human health and well-being.

DESCRIPTION

The resources assigned to this MBR project include:

- the budget of the Policy and Planning Branch related to the provision of research funding concerning air emissions and their effects,
- the person-years and budget of the Legal Services Branch related to the legal actions against industries concerning air pollution,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to point source air pollution issues,
- the person-years and budget of the Air Resources Branch related to the development of policies and plans for the control of air emissions, the evaluation of industrial technologies, the provision of assistance to the Regions on air pollution issues, and the maintenance of air quality information systems,
- the person-years and budget of the Water Resources Branch related to deposition of air pollution in water,
- the person-years and budget of the Laboratory Services Branch related to performing air quality tests, and the development of analytical techniques for measuring air pollutants,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the review or establishment of standards for pollutants emitted to air,
- the person-years and budget of the A.D.M., Operations Division, related to the management of point source air pollution issues,

- the person-years and budget of the Investigations and Enforcement Branch related to investigations and enforcement of sources in non-compliance with air emission criteria,

- the person-years and budgets of the Regions related to the inspection, monitoring and regulation of sources of air pollution, the maintenance of air quality monitoring equipment, the response to air pollution events, and the resolution of complaints about air pollution,

- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the review of applications for Certificates of Approval for industrial air emissions, and

- the person-years and budget of the Spills Action Centre related to the development of emergency response capabilities and plans.

(1) INDUSTRIAL AIR EMISSIONS

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of industrial point sources in Ontario (est.)	30,000	30,000	30,000	30,000
No. of industrial facilities with air emissions under MBR reporting	152	132	186	151
No. of industrial point sources under MBR reporting*	291	325	320	257
No. of air contaminants of concern (est.)	100	100	100	100
No. of air contaminants under MBR reporting	21	21	21	20

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* A point is considered as a single parameter monitored in the emissions from an industrial facility.

MAGNITUDE OF EMISSIONS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total emissions of suspended particulates, sulphur dioxide and nitrogen oxides from industrial point sources under MBR reporting (Mg/d)*	4,525 (69)**	4,170 (88)**	4,180 (98)**	3,687 (67)**

RESULTS

Operational Outputs

The Ministry held two workshops, one in 1985-86, and one in 1986-87, to discuss proposals for revising and tightening the Environmental Protection Act Regulation 308 regarding controls of emissions.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of industrial points assessed for compliance with existing criteria	252 (87%)	272 (84%)	262 (77%)	246 (96%)
No. of industrial noise complaints investigated for abatement	335	359	N/A	416
No. of enforcement investigations related to air emission compliance	N/A	23	N/A	239

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* 1 Mg = 1 tonne.

** No. of industrial point sources contributing to total emission figures. All major and some very small sources are included. Very small sources are under MBR reporting only when data are available.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Certificates of Approval issued	507	530	500	932
No. of communities assessed for air quality	84	86	84	85
No. of chemical compounds assessed for air quality standard setting purposes	N/A	41	N/A	50
No. of chemical compounds assessed for multi-media standard setting purposes	20	16	45	16
No. of scientific criteria documents completed	1	0	0	0

Scientific Criteria Documents: A program is under way to develop guidelines for the emissions of Polycyclic Aromatic Hydrocarbons (PAHs) with emphasis on coke oven emissions. Another scientific criteria document is being developed concerning arsenic.

Studies of Priority Contaminants: The Air Resources Branch has measured ambient air and soil for lead levels in conjunction with a triministry study of blood lead levels in school children.

Special Surveys: A project is under way to determine odour impacts. The results will be used to promulgate standards.

The laboratory testload associated with the analysis of samples related to point sources of air pollution is provided in Appendix A.

Program Outputs

The atmospheric emissions of 17 industrial sectors are evaluated relative to Ministry criteria. The 17 industrial sectors include:

- Iron and Steel Mills
- Pulp and Paper Mills
- Petroleum Refining
- Cement Manufacturing
- Metal Mines
- Thermal Generating Stations
- Non-Ferrous Smelting and Refining
- Plastics and Synthetic Resins Manufacturing
- Industrial Chemicals Manufacturing
- Abrasives Manufacturing
- Metal Stamping and Pressing Industries
- Lime Manufacturing
- Automobile Manufacturing
- Meat Processing
- Poultry Processing
- Insulation Materials Manufacturing, and
- Miscellaneous Manufacturing.

The industrial facilities under MBR reporting within each of the industrial sectors are identified in Appendix I.

A facility is identified as being substantially in compliance with a particular environmental criterion if an analysis of an adequately defined data base indicates compliance, or if there is an absence of other information that would be indicative of a non-compliance situation.

The evaluation is not intended to identify short-term failures to meet criteria. Therefore environmental damages and nuisance conditions may still occur when facilities are in "substantial compliance".

The detailed MBR evalulation of industrial facilities is provided in Appendix J.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
	12 Sectors	17 Sectors	16 Sectors	17 Sectors
No. of assessed points in compliance with existing criteria	232 (92%)	248 (91%)	251 (96%)	214 (87%)
No. of assessed points not in compliance with existing criteria, but with abatement plans	20 (8%)	24 (9%)	6 (2%)	26 (11%)
No. of assessed points not in compliance with existing criteria, and without abatement plans	0 (0%)	0 (0%)	5 (2%)	6 (2%)
	252	272	262	246

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
	12 Sectors	17 Sectors	16 Sectors	17 Sectors
No. of charges laid for sources not in compliance with air emission criteria	N/A	88	N/A	217
No. of convictions obtained related to charges laid	N/A	4	N/A	88

Program Effects

The figures below enumerate the communities with air quality affected by industrial emissions. Air quality statistics for the assessed communities in the Province are provided in Appendix K.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed communities with air quality affected by industrial emissions	72 (86%)	72 (84%)	72 (86%)	70 (82%)

Industrial emissions primarily contribute:

- suspended particulates and dustfall;
- nitrogen oxides;
- sulphur dioxide;
- total reduced sulphur; and
- hydrocarbons.

In 1986-87, dustfall and particulate emissions from industries were adversely influencing local air quality resulting in structures and material corrosion, soiling, and public complaints in 25 communities. Sixteen communities were experiencing local odours and nuisance effects from sulphur dioxide and total reduced sulphur emissions. Localized areas in two communities were being exposed to industrial hydrocarbons resulting in public concern about possible health effects. In two communities, amines from meat packing plants were causing odours, and in one community (Toronto), lead from secondary smelters was causing soils and health effects. As well, one community (Port Hope) was receiving fluoride and low level radiation emissions which was resulting in vegetation damage, public complaints, and public concern about health effects.

EFFICIENCY Indicators not developed

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of industrial points in compliance with existing criteria as a % of total no. of points assessed	90%	91%	96%	87%
No. of industrial points not in compliance but with abatement plans as a % of the total no. of assessed points not in compliance	100%	100%	55%	81%

(2) INCINERATOR AIR EMISSIONS

SCOPE

No. of incinerators*	150	150	252	149
No. of incinerators under MBR reporting	16	13	15	8

MAGNITUDE OF EMISSIONS Indicators not developed

RESULTS

Operational Outputs

A policy on biomedical waste has been updated and new guidelines on the handling and disposal of such waste have been widely distributed.

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* Municipal waste, municipal sewage sludge, special waste, energy from waste (EFW) and biomedical waste incinerators.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities assessed for air quality	84	86	84	85

Program Outputs (Data base is under development and is incomplete.)

The inventory of incinerators under MBR reporting is provided in Appendix L.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed incinerator points* in compliance with existing criteria	6 (55%)	6 (67%)	11 (92%)	4 (57%)
No. of assessed points not in compliance with existing criteria, but with abatement plans	5 (45%)	3 (33%)	1 (8%)	3 (38%)
No. of assessed points not in compliance with existing criteria, and without abatement plans	0 (0%)	0 (0%)	0 (0%)	1 (12%)
	11	9	12	8

Program Effects

The communities with air quality affected by incinerator emissions are enumerated below. Air quality statistics for the assessed communities in Ontario are provided in Appendix K.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed communities with air quality affected by incinerator emissions	3 (4%)	3 (4%)	3 (4%)	3 (4%)

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* A point is considered as a single parameter monitored in the emissions from an incinerator.

Incinerator emissions primarily contribute:

- suspended particulates;
- nitrogen oxides;
- sulphur dioxide; and
- hydrocarbons.

There has been public concern expressed about emissions of organic contaminants from incinerators. Older biomedical waste incinerators are not able to satisfactorily incinerate waste compositions containing high ratios of plastics and thus the potential exists for undesirable emissions if loadings are not strictly controlled. In 1986-87, no localized adverse air quality effects were being reported as resulting from incinerator emissions.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	11,174	13,005	12,410	18,018*
. Person-Years	187	207	198	206

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* The expenditures increase between 1985-86 and 1986-87 is mainly attributable to increases in planning, monitoring, abatement and analytical activities associated with industrial and incinerator air emissions.

MBR PROJECT ON THE MANAGEMENT OF NON-POINT SOURCES OF AIR POLLUTION

OBJECTIVE

To manage non-point sources of air pollution in Ontario in order to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

Non-point sources of air pollution are inherently more complex to control than point sources and pose special management problems. Regulatory capabilities equivalent to those that the Province has over major point sources are not appropriate either for technical or for socio-economic reasons. The major non-point sources of air pollution are automobiles, residential space heating and construction. As well, community noise is considered to be a non-point pollution source.

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to prosecutions of vehicle owners and garages for failure to comply with regulations governing vehicle emissions,

- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to the management of non-point source air pollution issues,

- the person-years and budget of the Air Resources Branch related to the assessment of the significance of non-point sources of pollution on air quality, the administration of the vehicle emissions control program, and the maintenance of an air quality information system,

- the person-years and budget of the Laboratory Services Branch related to the analysis of air samples in communities affected by non-point sources of air pollution,

- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the development of air quality standards, and policies and plans for the management of non-point sources of air pollution,

- the person-years and budget of the Investigations and Enforcement Branch related to investigations and enforcement of sources in non-compliance with air emission criteria,

- the person-years and budgets of the Regions related to the maintenance of air quality instrumentation, the assessment of the impact of non-point emissions on local air quality and the implementation of municipal noise by-laws, and

- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the assessment of noise sources, the provision of noise expertise to the Regions, and the development of noise policies, plans and guidelines.

(1) TRANSPORTATION - VEHICLE EMISSIONS

SCOPE

Vehicles are responsible for 91% of the carbon monoxide, 62% of the hydrocarbons, and 35% of the nitrogen oxides from all sources in Ontario.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of registered motor vehicles (millions)	4.34	4.97	4.42	5.42

MAGNITUDE OF EMISSIONS

Emissions of sulphur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and particulates (Mg/d)*	10,400	10,700	10,600	10,900

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* 1 Mg = 1 tonne

RESULTS

Operational Outputs

The Ministry's "Vehicle Emission Control Program" consists of vehicle spotchecks, investigations of complaints regarding purchased vehicles lacking emission controls and assessments of vehicle mass emissions data. Vehicle spotchecking is restricted to the Toronto area but investigations of complaints occur province-wide.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of vehicle emissions spotchecks	909	542	1,200	1,119*
No. of inspections of emission control systems at used car dealerships	3,533	1,544	3,800	218
No. of enforcement investigations related to vehicle emission compliance	0	4	6	0
No. of communities assessed for air quality	84	86	84	85

The laboratory testload associated with the analysis of samples related to non-point sources of air pollution is provided in Appendix A.

Program Outputs

% of cars violating vehicle emission standards (est.)	52%	55%	46%	45%
% of violations concerning the installation of emission control systems (est.)	7%	11%	5%	8%
No. of charges laid related to emission standards compliance	N/A	31	N/A	0
No. of convictions obtained related to charges laid	N/A	1	N/A	0

* The increase between 1985-86 and 1986-87 is attributable to an increased number of police spotchecks.

Program Effects

The figures below enumerate the communities with air quality affected by vehicle emissions. Air quality statistics for the assessed communities in the Province are provided in Appendix K.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed communities with air quality affected by vehicle emissions	42 (50%)	41 (48%)	43 (51%)	41 (48%)

In 1986-87, diesel fumes from a bus depot in downtown Toronto adversely affected local air quality, resulting in odours and public complaints.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

(2) RESIDENTIAL SPACE HEATING

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total housing stock (millions of units) (est.)	3.50	3.80	3.62	3.90

MAGNITUDE OF EMISSIONS

Emissions of sulphur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and particulates (Mg/d)	741	746	687	764

RESULTS

Operational Outputs

There are currently no Ministry controls specific to residential space heating. Involvement is limited to the investigation of complaints concerning visible emissions from apartment building heating systems.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities assessed for air Quality	84	86	84	85

Program Effects

The figures below enumerate the communities with air quality affected by space heating emissions. Air quality statistics for the assessed communities in the Province are provided in Appendix K.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities with air quality affected by space heating emissions	27 (32%)	27 (31%)	28 (33%)	26 (31%)

In 1986-87, no localized effects were being reported in any of the communities where space heating emissions influence air quality.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

(3) CONSTRUCTION AND URBAN ACTIVITY

SCOPE

All construction and urban activity.

RESULTS

Operational Outputs

These sources are not controlled. Several demonstration projects are under way to determine the feasibility of reducing urban dust.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities assessed for air quality	84	86	84	85

Program Effects

The figures below enumerate the communities with air quality affected by construction. Air Quality statistics for the assessed communities in the Province are provided in Appendix K.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities with air quality affected by construction and urban activity	24 (29%)	26 (30%)	25 (30%)	26 (31%)

Construction and urban activity primarily contribute dustfall and suspended particulates. No localized effects are being reported as a result of urban and construction activity.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

(4) COMMUNITY NOISE

SCOPE

All urban municipalities.

RESULTS

Operational Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of noise complaints investigated for abatement:				
. Air Conditioner and Heat Pump	45 (21%)	46 (18%)	30 (14%)	53 (17%)
. Public Nuisance	14 (6%)	29 (11%)	20 (10%)	31 (10%)
. Vehicle Noise	28 (13%)	28 (11%)	20 (10%)	50 (17%)
. Vibration	34 (16%)	29 (11%)	30 (14%)	31 (10%)
. Railway	4 (2%)	26 (10%)	5 (2%)	10 (3%)
. Blasting	35 (16%)	48 (19%)	45 (21%)	66 (22%)
. Municipal By-Law	33 (15%)	27 (11%)	35 (17%)	39 (13%)
. Other	25 (11%)	23 (9%)	25 (12%)	23 (8%)
	218	256	210	303
No. of enforcement investigations related to noise requirements	N/A	2	N/A	10

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of plan reviews and reviews of projects with a noise/vibration abatement component	208	212	200	254
No. of municipal noise control by-laws approved	N/A	9	N/A	9
Program Outputs				
No. of municipalities with noise control by-laws	88	92	100	144
No. of projects with voluntary noise/vibration controls undertaken following Ministry review	11	16	20	20
No. of Municipal Noise Control Officers receiving training and certification	15	0	10	51
No. of charges laid related to compliance with noise requirements	N/A	18	8	54
No. of convictions obtained related to charges laid	N/A	5	N/A	21

Program Effects

Noise and vibration cause psychological, social and possibly health related problems and can result in reduced recreational amenity and decreased property values. Data are unavailable at this time on the occurrence of such problems in Ontario.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	3,519	3,603	3,113	4,487
. Person-Years	60	62	58	59

MBR PROJECT ON THE MANAGEMENT OF TRANSBOUNDARY AIR POLLUTION AND ATMOSPHERIC DEPOSITION

OBJECTIVE

To regulate Ontario sources contributing to transboundary air pollution and to advocate and negotiate limits to reduce the deposition in Ontario of transboundary air pollution from outside the Province in order to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

Transboundary air pollution is assigned to a separate MBR project because of the special management problems it poses. Ministry control over transboundary pollution is limited to participation in negotiating and implementing national and international agreements. At the present time, efforts are primarily directed towards assessing the effects of transboundary air pollution and towards ensuring the full implementaiton of Ontario's acid gas control program (Countdown Acid Rain).

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to Ontario's representation at Federal or U.S. proceedings on transboundary air pollution issues,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to long-range air pollution issues and acid deposition,
- the person-years and budget of the Air Resources Branch related to the Acid Precipitation in Ontario Study (APIOS) and to the investigation of other long range air pollution problems including ozone and organics,
- the person-years and budget of the Water Resources Branch related to research on the aquatic effects of acid deposition,
- the person-years and budget of the Laboratory Services Branch involving the analysis of APIOS samples,
- the person-years and budget of the Office of the A.D.M., Intergovernmental Relations and Strategic Projects Division and the Acid Precipitation Office related to the coordination of intergovernmental air quality issues,

- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the development of air quality standards, and

- the person-years and budgets of the Regions related to APIOS and the investigation of cases of transboundary air pollution affecting Ontario.

SCOPE

Sources of sulphur and nitrogen emissions external to Ontario, primarily in the eastern United States and in the Provinces of Manitoba and Quebec, are of concern because of the potential damages acid deposition may cause in Ontario.

Sources, particularly in the northeastern United States, of hydrocarbons and nitrogen oxides have adverse effects on ozone levels. Transboundary sources of toxic organics including PCBs, polycyclic aromatic hydrocarbons (PAHs), pesticides and furans are also of concern.

Major sources of sulphur and nitrogen emissions in Ontario have the potential to cause impacts beyond Ontario.

Sources include thermal power generating stations, refineries, non-ferrous smelters and vehicles.

RESULTS

Operational Outputs

International Initiatives (1986-87):

- Ontario is represented on the United Nations Economic Commission for Europe (ECE) Committee on Effects of Sulphur on the Environment. The ECE is promoting a 30% reduction in sulphur dioxide emissions by 1993 for its 18 member countries, including Canada.

- Ontario is co-operating with Environment Canada and Germany in the development of the Eulerian Model and the Atmospheric Deposition and Oxidants Model which will define source/receptor relationships.

- Ontario is co-operating with the U.S. EPA in the development and design of a major field study to provide data for validating Eulerian long range transport models, is assisting other agencies in developing a North American deposition data base, and is participating in the design and assessment of the U.S. National Acid Precipitation Assessment Program.

- Ontario has participated in an inter-laboratory study with five U.S. laboratories to develop standardized techniques and procedures and has participated with the U.S. in a methodology study on the effects of acidic precipitation on crops.

Provincial Initiatives (1986-87):

- Data from field studies in southwestern Ontario were analyzed in 1986-87 to determine the contributions of Ontario and transboundary sources to ambient levels of ozone. Results of the Sarnia oxidants study were used as input to investigate the effectiveness of hydrocarbon versus NO_x control in southern Ontario.

- An atmospheric deposition monitoring network for toxic organic substances is being implemented in the Great Lakes Basin.

Through APIOS, a wide range of activities that were initiated in prior years were continued in 1986-87:

- Atmospheric Processes Studies: Emission inventorying in Ontario and North America, long-term and short-term deposition modelling, deposition monitoring and trajectory analysis studies are under way.

- Aquatic Effects Studies: Eight lakes and 32 watersheds are being studied in detail in the Muskoka-Haliburton area. Results from these studies will give accurate rates of change of water quality, can be used to determine "acceptable" acid loadings, and will serve as long-term monitors of the effectiveness of abatement programs. A project to determine the sources of mercury to the study lakes has been initiated. A trace metal sampling program has been initiated to determine the major sources and sinks of cadmium, lead and zinc. Sensitivity of native fish to pH depressions has been assessed over a five year period (1981-86). A monitoring program has been initiated to determine long term trends in changes to aquatic biota.

- Terrestrial Effects Studies: A baseline survey of soils and vegetation has been completed. Experiments are being conducted to determine the effects of acid deposition and associated air pollutants on commercial crops, maple, poplar and spruce seedlings. A maple decline study continued in 1986-87 to determine the role of acid deposition. A province-wide hardwood decline study and a dendrochronology study focusing primarily on sugar maples was continued in 1986-87.

- Biogeochemistry Studies: Monitoring continued at four sites located in three deposition area categories - high, moderate, low. Field studies were developed to address the effect of acid deposition on natural mineral weathering rates of bedrock and till on the Precambrian Shield and on aluminum and sulphur cycles. Interactions between deposition, vegetation, soils, groundwater and stream water are being investigated.

- Socio-Economic Investigations: Studies are being conducted to determine costs of abatement and mitigation measures in order to develop an overall abatement program. Models have been developed which estimate the potential biological and economic effects of acid precipitation. A survey of cottagers was undertaken to determine the extent of nuisance algae problems as related to acid precipitation.

- Public Relations Initiatives: Initiatives include brochures, fact sheets, open houses, exhibits, tours and films to increase public awareness in Ontario and the U.S. Mini-videotapes are being prepared on different aspects of the acid precipitation problem. The proceedings of the International Symposium on Acidic Precipitation which was held in Muskoka in 1985 were published in 1987. As part of the Countdown Acid Rain program, Ontario has launched a major public relations initiative and non-resident anglers are provided the opportunity to obtain information on acid rain through a tear off card attached to their fishing licences.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities assessed for air quality	84	86	84	85

The laboratory testload associated with the analysis of APIOS samples is provided in Appendix A.

Program Outputs

International Initiatives (1986-87):

- Since 1984-85, Ontario and a few U.S. states have attempted through hearings in several courts to force the U.S. EPA to regulate sulphur dioxide emissions more stringently. In February, 1987, Ontario and New York filed independent petitions to the U.S. Supreme Court to review the entire case.

Federal/Provincial Initiatives (1986-87):

- Under the Countdown Acid Rain Program, Ontario set annual sulphur dioxide emission levels for Ontario Hydro, Inco, Falconbridge and Algoma Steel at 665,000 tonnes by 1994. Total annual emissions in Ontario should not exceed 885,000 tonnes.

There has been extensive lake sampling as part of APIOS and by the Ministry of Natural Resources to assess the current chemical (i.e., pH and alkalinity) status of provincial waters being affected by long range transport and atmospheric deposition. Lake sampling efforts have primarily been undertaken in lakes of significant recreational concern and in areas where acid sensitivity is a problem. The results of these surveys are identified below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of lakes found to be acidified	220 (4%)	244 (4%)	N/A	244 (4%)
No. of lakes found to be extremely sensitive	789 (15%)	934 (15%)	N/A	934 (15%)
No. of lakes found to be moderately sensitive	2,043 (38%)	2,312 (38%)	N/A	2,325 (38%)
No. of lakes found to be of low sensitivity	921 (17%)	1,031 (17%)	N/A	1,069 (17%)
No. of lakes found to be not sensitive	1,368 (26%)	1,542 (26%)	N/A	1,589 (26%)
Total no. of lakes surveyed	5,341	6,063	6,263	6,161*

Program Effects

Air quality statistics for the assessed communities in the Province and water quality data for 144 tertiary watersheds are provided in Appendices K and F respectively. Air quality in communities may be affected by long range transport from air emission sources internal or external to Ontario. Similarly, both Ontario and non-Ontario emission sources contribute to the atmospheric deposition affecting Ontario watersheds.

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* A breakdown of the sensitivity of 140 additional lakes sampled is unavailable.

The figures below enumerate the communities with air quality affected by long range transport of air pollutants. It should be noted that a community may be affected by long range transport of air pollutants without necessarily experiencing localized impacts.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities with air quality affected by long range transport	31 (37%)	32 (37%)	33 (39%)	31 (36%)

For several years, the long range transport of ozone has resulted in vegetation damages and reduced agricultural production in communities in Southern Ontario. As well, one community (Windsor) was being exposed to transboundary sources of particulates and reduced sulphur which caused local odour problems and corrosion of structures and materials.

Experiments on crops exposed to varying levels of acidity in rain have not indicated any detrimental short-term effects on most crop cultivars at current levels of rain acidity.

Surveys of groundwater supplies have indicated a number of corrosive, low pH water supplies, some of which can result in elevated levels of metals in drinking water. The acidity of these supplies was found to be due to naturally occurring carbonic acid.

Tertiary watersheds affected by atmospheric deposition are enumerated below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with surface waters affected by atmospheric deposition	15 (10%)	15 (10%)	15 (10%)	16 (11%)

The major aquatic effects resulting from atmospheric deposition are:

- surface water acidification;
- destruction of aquatic ecosystems; and
- fish mortality.

Impacts in the tertiary watersheds affected by atmospheric deposition are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with poor quality or reduced fishing	11	11	11	10
No. of watersheds with damages to special or unique features	2	2	2	2
EFFICIENCY	Indicators not developed			
EFFECTIVENESS	Indicators not developed			
RESOURCES				
. Expenditures ($000s)	9,732	9,295	10,073	9,608
. Person-Years	121	90	106	94

MBR PROJECT ON THE MANAGEMENT OF MUNICIPAL WASTES DIRECTED TO LANDFILL

OBJECTIVE

To regulate the development and operation of waste disposal sites in Ontario receiving municipal wastes so as to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

The resources assigned to this MBR project include:

- transfer payments to municipalities for operational improvements to waste disposal sites and for site closures under the "Waste Site Improvement Program",
- the budget of the Policy and Planning Branch related to waste disposal research,
- the person-years and budget of the Legal Services Branch related to the development of legislation and regulations for the management of municipal wastes, and for legal enforcement actions,
- the person-years and budget of the Office of the A.D.M., Environmental Services Division, related to municipal waste disposal issues,
- the person-years and budget of the Air Resources Branch related to the assessment of emissions from waste disposal sites,
- the person-years and budget of the Waste Management Branch related to the development of policies and programs for the management of municipal wastes, the updating of waste disposal site inventories, and the preparation of waste management master plans,
- the person-years and budget of the Laboratory Services Branch related to the analysis of leachate samples,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the review or establishment of standards for municipal waste disposal site leachates,
- the person-years and budget of the Investigations and Enforcement Branch related to investigations and enforcement of waste handlers in non-compliance with regulations,

- the person-years and budgets of the Regions related to the inspection and regulation of active municipal waste disposal sites and systems, the development of new sites, and the assessment of old, closed sites, and

- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the approval of municipal waste disposal sites.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of municipal wastes generated (10^3 Mg/yr)*	9,800**	11,350	9,900**	11,300
Quantity of municipal wastes disposed of at landfill sites (10^3 Mg/yr)	9,500	11,177	9,600	10,396
Quantity of sewage sludges placed in drying beds or directed to landfill (10^3 Mg/yr)	1,500	1,359	600	1,676
No. of active municipally and privately owned and operated landfill sites receiving municipal wastes	763	709	741	756
No. of active landfill sites operated by the Ministry of Natural Resources (MNR)	519	488	518	534
No. of active landfill sites operated by corporations for their own non-hazardous wastes	211	199	216	203
No. of closed landfill sites	1,252	1,352	1,265	1,315

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* 1 Mg = 1 tonne.

** 1984-85 Results and 1986-87 Planned Results figures did not include non-hazardous solid industrial wastes.

The quantity of municipal wastes generated is an estimate based on average per capita waste generation figures, developed by the Waste Management Advisory Board, and Ontario population statistics. Municipal wastes are defined as residential, commercial, institutional, and non-hazardous solid industrial wastes.

Some municipal wastes are incinerated at the Toronto municipal incinerator and at SWARU in Hamilton. These facilities are represented in the MBR Project on Point Sources of Air Pollution. Minor quantities of municipal wastes are recovered from the waste stream. These wastes are evaluated in the MBR Project on Source Separation and Recycling and the MBR Project on Resource Recovery.

RESULTS

Operational Outputs

The Ministry developed a "Blueprint for Waste Management" which was released in June 1983. The status of municipal waste management activities resulting from the "Blueprint" follows:

- A "Municipal Waste Management Master Planning Program" was developed and has been implemented;
- Guidelines and policies on the 4Rs (reduction, re-use, recycling, recovery) were developed in 1986-87;
- A "Municipal Recycling Support Program" was implemented in 1986-87; and
- Guidelines on the disposal of biomedical wastes were implemented in 1986-87.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of active municipally and privately owned and operated sites assessed	697 (91%)	659 (93%)	741 (100%)	632 (84%)
No. of active MNR sites assessed	462 (89%)	438 (90%)	461 (89%)	486 (91%)
No. of active corporation sites assessed	205 (97%)	176 (88%)	212 (98%)	191 (94%)
No. of closed sites assessed	1,194 (95%)	1,122 (83%)	1,225 (97%)	1,098 (83%)

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of enforcement investigations related to municipal waste handling/disposal requirements	N/A	13	N/A	80
No. of Certificates of Approval issued	140	636	140	784

The Ministry provides funding under the "Waste Site Improvement Program" to municipalities to enable proper closing of landfill sites and for studies and remedial measures aimed at improving environmental quality at sites. The following data summarize activities under the "Waste Site Improvement Program".

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of closures	16	12	58	18
No. of remedial measures	N/A	11	N/A	2
No. of investigative studies	20	22	97	31
No. of site improvements	56	84	97	101
No. of other projects	12	4	N/A	5

The laboratory testload associated with the analysis of samples related to municipal wastes is provided in Appendix A.

Program Outputs

Active Municipally and Privately Owned and Operated Landfill Sites Receiving Municipal Wastes:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed sites developed and operated satisfactorily	580 (83%)	526 (80%)	661 (89%)	477 (75%)
No. of assessed sites in operation with groundwater, surface water, gas control or site management problems	117 (17%)	133 (20%)	80 (11%)	155 (25%)
	697	659	741	632
No. of confirmed groundwater quality problems resulting from active waste site leachates which were resolved	2	6	N/A	23

Active Landfill Sites Operated by MNR:

No. of assessed sites developed and operated satisfactorily	446 (97%)	405 (92%)	439 (95%)	464 (95%)
No. of assessed sites in operation with groundwater, surface water, gas control or site management problems	16 (3%)	33 (8%)	22 (5%)	22 (5%)
	462	438	461	486

Active Landfill Sites Operated by Corporations for their Own Non-hazardous Wastes:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of assessed sites developed and operated satisfactorily	186 (91%)	154 (88%)	195 (92%)	169 (88%)
No. of assessed sites in operation with groundwater, surface water, gas control or site management problems	19 (9%)	22 (12%)	17 (8%)	22 (12%)
	205	176	212	191
No. of confirmed groundwater quality problems resulting from waste site leachates which were resolved	3	4	N/A	12

Closed Landfill Sites:

No. of assessed closed sites with no identified problems	1,166 (98%)	1,092 (97%)	1,209 (99%)	1,063 (97%)
No. of assessed closed sites with groundwater, surface water, gas control or other problems	28 (2%)	30 (3%)	16 (1%)	35 (3%)
	1,194	1,122	1,225	1,098
No. of charges laid related to non-compliance with municipal waste handling/disposal requirements	N/A	78	N/A	89
No. of convictions obtained related to charges laid	N/A	9	N/A	50

Program Effects

The objective of this MBR project is to prevent adverse off-site effects on human health and well-being and on the natural environment from the operation of waste disposal sites. Not all of the municipal waste sites evaluated as having operational problems are causing off-site environmental, social, economic, or public health concerns. Localized off-site effects caused by municipal waste disposal sites are summarized below.

Active Municipally and Privately Owned and Operated Landfill Sites Receiving Municipal Wastes:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of sites causing private or municipal water supply contamination problems	3	7	4	6
No. of sites causing surface water contamination problems	34	28	14	47**
No. of sites causing gas hazard problems	1	1	0	3
No. of sites causing nuisance effects and interference with the use of neighbouring property*	65	75	35	82
No. of outstanding confirmed groundwater quality problems resulting from active waste site leachates	24	24	N/A	44**

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* Smoke, noise, aesthetics, litter, rats, etc.

** The increase between 1985-86 and 1986-87 attributable to improved MBR reporting.

Active Landfill Sites Operated by MNR:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of sites causing private or municipal water supply contamination problems	0	0	0	0
No. of sites causing surface water and groundwater contamination problems	0	2	0	1
No. of sites causing gas hazard problems	0	0	0	0
No. of sites causing nuisance effects and interference with the use of neighbouring property	8	32	10	21

Active Landfill Sites Operated by Corporations for their Own Non-hazardous Wastes:

No. of sites causing private or municipal water supply contamination problems	1	2	1	1
No. of sites causing surface water contamination problems	12	15	2	10
No. of sites causing gas hazard problems	0	0	0	0
No. of sites causing nuisance effects and interference with the use of neighbouring property	5	7	0	6
No. of outstanding confirmed groundwater quality problems resulting from waste site leachates	12	15	N/A	20

Closed Landfill Sites:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of sites causing private or municipal water supply contamination problems	3	3	1	4
No. of sites causing surface water or groundwater contamination problems	22	19	13	19
No. of sites causing gas hazard problems	4	4	2	9
No. of sites causing other problems	2	2	2	4

Identification of the municipal landfill sites causing off-site problems is provided in Appendix M.

EFFICIENCY

Operational Efficiency

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of active and closed sites assessed per person-year	25.8	23.7	25.6	20.4

Program Efficiency — Indicators not developed

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of active sites which are developed and operated satisfactorily as a % of total number assessed	89%	83%	92%	85%
No. of closed sites with no identified problems as a % of total number assessed	98%	97%	99%	97%

RESOURCES

. Expenditures ($000s)	5,844	6,632	6,997	8,414
. Person-Years	101	101	103	118
. Revenue ($000s)	0	0	5	0

MBR PROJECT ON THE MANAGEMENT OF SPECIAL WASTES

OBJECTIVE

To regulate special waste* management systems in Ontario and to develop a Provincial special waste management facility in order to prevent adverse effects on human health and well-being and on the natural environment.

DESCRIPTION

The resources assigned to this MBR project include:

- the budget of the Policy and Planning Branch related to special waste research,
- the person-years and budget of the Legal Services Branch related to the development and enforcement of regulations and legislation for the management of special waste,
- the person-years and budget of the Office of the ADM, Environmental Services Division, related to the management of special wastes,
- the person-years and budget of the Air Resources Branch related to the assessment of air emissions from special waste facilities,
- the person-years and budget of the Water Resources Branch related to the assessment of wastewater discharges and leachates from special waste sites and facilities,
- the person-years and budget of the Waste Management Branch related to the administration of the waybill system, to the assessment of waste destruction technology, to the development of policies, regulations and legislation governing the management of special wastes, to the listing/delisting of hazardous wastes, and to the Household Special Waste Collection Program,
- the person-years and budget of the Laboratory Services Branch involving the analysis of samples from waste generators and special waste facilities,

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* "Special Wastes" include liquid and solid hazardous wastes, and most liquid industrial wastes.

- the person-years and budget of the Hazardous Contaminants Coordination Branch related to the development of industrial chemical standards,

- the person-years and budget of the Investigations and Enforcement Branch related to the investigation of violations and enforcement of regulations and legislation pertaining to the management of special wastes,

- the person-years and budgets of the Regions related to the regulation of generators and haulers of special wastes, to the regulation of special waste disposal facilities, and to public inquiries regarding the disposal of special wastes,

- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the approval and certification of special waste haulers and special waste disposal facilities,

- the person-years and budget of the Financial and Capital Management Branch related to the provision of financial support to the Ontario Waste Management Corporation, and

- the person-years and budget of the Ontario Waste Management Corporation related to the development of a Provincial waste management facility.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of generators of hauled special wastes	2,650	5,000	5,000	14,150*
No. of licensed special waste haulers	320	360	400	729*
No. of treatment/disposal sites or facilities receiving Ontario-generated special wastes**	167	134	210	599*

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* The increase between 1985-86 and 1986-87 is attributable to the implementation and enforcement of Regulation 309.

** Figures include out-of-Province locations.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of treatment/disposal sites or facilities operated in Ontario receiving special wastes	111	104	154	515*
No. of PCB storage sites in Ontario	N/A	534	400	495
Volume of PCB contaminated liquids in storage (million litres)(est.)	N/A	1.5	1.5	1.5

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* The increase between 1985-86 and 1986-87 is attributable to the implementation and enforcement of Regulation 309.

DISPOSITION OF WAYBILL DOCUMENTED WASTES

	1984-85		1985-86		1986-87 Planned		1986-87 Actual	
	Volume (10^3 Litres)	No. of Sites	Volume (10^3 Litres)	No. of Sites	Volume (10^3 Litres)	No. of Sites	Volume (10^3 Litres)	No. of Sites
Incineration	76,440 (18%)	2	61,000 (11%)	6*	100,000 (16%)	2	70,000 (7%)	26*
Direct Landfill	87,770 (20%)	11	142,000 (25%)	10	80,000 (13%)	10	150,600 (15%)	33
Sewage Treatment Plants	100,690 (23%)	30	166,000 (29%)	35	150,000 (24%)	50	322,000 (32%)	67
Reclamation and Re-use	74,340 (17%)	35	84,000 (15%)	31	150,000 (24%)	52	197,400 (20%)	61
Export	49,240 (11%)	56	50,000 (9%)	30	50,000 (9%)	56	42,000 (4%)	84
Dust Suppression	N/A	N/A	N/A	N/A	N/A	N/A	75,000 (7%)	53
Miscellaneous	960 -	N/A	7,000 (1%)	N/A	1,000 -	N/A	23,000 (2%)	131
Received at Transfer Stations	46,730 (11%)	33	55,000 (10%)	22	85,000 (14%)	40	131,000 (13%)	143**
Total waybill documented wastes	436,170	167	565,000	134	616,000	210	1,011,000	599

* Includes biomedical waste incinerators.

** Includes emergency and spills clean-up receivers.

RESULTS

Operational Outputs

The Ontario Waste Management Corporation has selected a site in West Lincoln Township as its preferred site for a waste management facility. Its technical investigations for the facility and more detailed assessments of the candidate site continued in 1986-87.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of waste transfer loads recorded in waybill system	32,000	45,000	50,000	90,000*
No. of waste generators registered under Environmental Protection Act Regulation 309	N/A	5,000	6,000	12,000
No. of mobile PCB destruction units certified	N/A	1	3	2
No. of enforcement investigations related to special waste management regulations	N/A	33	N/A	410
No. of household special waste collection projects funded	N/A	0	N/A	9

The laboratory testload associated with the analysis of samples related to special wastes is provided in Appendix A.

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* The increase between 1985-86 and 1986-87 is attributable to implementation and enforcement of Regulation 309.

Program Outputs

An inventory of liquid industrial and hazardous waste sites, facilities, treatment centres and plants is provided in Appendix N.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of special waste facilities in Ontario operated satisfactorily	103 (93%)	94 (90%)	149 (97%)	506 (98%)
No. of special waste facilities in Ontario with one or more environmental or operational problems*	8 (7%)	10 (10%)	5 (3%)	9 (2%)
Total no. of special waste facilities operated in Ontario	111	104	154	515**
No. of PCB storage sites in Ontario operated satisfactorily	N/A	528 (99%)	N/A	495 (100%)
No. of PCB storage sites in Ontario not in compliance with requirements	N/A	6 (1%)	N/A	0 (0%)
Total no. of PCB storage sites in Ontario	N/A	534	N/A	495
No. of confirmed groundwater quality problems resolved which were attributed to leachates from special waste landfill sites	1	1	1	3
No. of charges laid related to violations of special waste management regulations	N/A	140	N/A	694
No. of convictions obtained related to charges laid	N/A	8	N/A	111

* Surface or groundwater supply contamination, aquatic ecosystem destruction or odours.

** The increase between 1985-86 and 1986-87 is attributable to implementation and enforcement of Regulation 309.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of household special wastes collected (Mg/yr) (est.)	N/A	0	30.0	30.0
No. of households participating in special waste collection projects	N/A	0	N/A	1,260

Program Effects

Localized off-site environmental effects caused by special waste facilities operated in Ontario are summarized below. A facility may cause more than one environmental effect.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of facilities causing drinking water supply contamination problems (surface or groundwater)	1	1	1	1
No. of facilities causing local aquatic ecosystem problems	0	0	0	0
No. of facilities causing odour problems	6	7	4	2
No. of facilities causing other effects of concern	3	3	1	4
No. of confirmed new or ongoing groundwater quality problems attributed to special waste disposal at landfill sites	6	6	7	7

EFFICIENCY Indicators not developed

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of special waste facilities operated satisfactorily as a % of total no. of facilities operated in Ontario	93%	90%	97%	98%
No. of PCB storage sites operated satisfactorily as a % of total no. of sites in Ontario	N/A	99%	N/A	100%

RESOURCES

. Expenditures ($000s)	19,241	19,221	19,777	21,318
. Person-Years	74	106	125	132
. Revenue ($000s)	50	48	44	65

MBR PROJECT ON THE UTILIZATION OF SEWAGE SLUDGE AND THE MANAGEMENT OF SUBSURFACE SEWAGE SYSTEMS

OBJECTIVE

To manage the utilization of sewage sludge on land and to regulate the installation of subsurface sewage systems so as to prevent adverse effects on human health and well-being and on soils and the natural environment in Ontario.

DESCRIPTION

The resources assigned to this MBR project include:

- transfer payments to Health Units for the administration of Part VII of the Environmental Protection Act (E.P. Act),
- the person-years and budget of the Legal Services Branch related to legislative and regulatory amendments under Part VII, E.P. Act, the maintenance of agreements with Health Units under Part VII, E.P. Act, and the provision of legal advice on private sewage systems issued to Health Units and Regional staff,
- the person-years and budget of the Waste Management Branch related to sewage sludge utilization policy and program development,
- the person-years and budgets of the Laboratory Services Branch involving the testing and analysis of sewage sludge samples and of surface water samples from areas using private sewage systems and sewage sludge,
- the person-years and budget of the Investigations and Enforcement Branch related to investigations and enforcement of Part VII, E.P. Act,
- the person-years and budgets of the Regions related to the administration of Part VII, E.P. Act, and to the operation of the sludge utilization program,
- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to private sewage system policy and program development, and
- the person-years and budget of the Financial and Capital Management Branch related to the administration of transfer payments to Health Units.

(1) SLUDGE UTILIZATION

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of sewage sludge generated (10^3 Mg/yr)*	6,300	6,300	6,500	6,400
No. of sewage treatment facilities practising sludge utilization	185	183	183	202
Total agricultural land area certified to receive sludge (ha)	37,200	27,400	37,000	26,000
Total agricultural land area actually receiving sludge (ha)	12,700	13,800	13,200	11,700
No. of sludge transfer stations certified to receive sludge	34	39	38	44

RESULTS

Operational Outputs — Indicators not developed

Program Outputs

Quantity of sludge utilized on agricultural land (10^3 Mg/yr)	1,540	1,250	1,400	900

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* 1 Mg = 1 tonne.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of sludge composted or used in mine tailings rehabilitation (10^3 Mg/yr)	130	7	130	38
No. of facilities that practise sludge utilization and produce sludges of acceptable quality for agricultural application	162 (88%)	163 (89%)	172 (94%)	153 (76%)
No. of facilities that practise sludge utilization and produce sludges of marginal quality for agricultural application	13 (7%)	11 (6%)	4 (2%)	12 (6%)
No. of facilities that practise sludge utilization and produce sludges of unacceptable quality for agricultural application	10 (5%)	9 (5%)	7 (4%)	37 (18%)

In most instances, sludges of marginal or unacceptable quality are being applied at reduced rates. At many facilities, measures are planned or under way to either improve the quality of sludge or to dispose of the sludge in ways other than on agricultural land. An inventory of sewage treatment facilities producing sludges of marginal or unacceptable quality is provided in Appendix O.

Program Effects

The sludge utilization program provides two main benefits:

- Sludge disposal costs are reduced, compared with other disposal methods. Incinerator, capital and operating costs are avoided, and the costs of hauling sludge longer distances to landfill sites are decreased.
- Sludges act as soil conditioners and provide nutrients to the soil.

EFFICIENCY

Operational Efficiency

Indicators not developed

Program Efficiency

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of facilities that practise sludge utilization and produce sludges of an acceptable quality as a % of all facilities practising sludge utilization	88%	89%	94%	76%

EFFECTIVENESS Indicators not developed

(2) PRIVATE SEWAGE SYSTEMS

SCOPE

No. of dwellings and commercial establishments with private sewage systems (est.)	770,000	770,000	770,000	770,000
No. of licensed private sewage system installers and sewage sludge haulers	4,023	4,409	4,100	4,697

RESULTS

Operational Outputs

No. of lots reviewed to determine their suitability for subsurface sewage systems:

. by MOE	2,500	5,180	3,000	7,520
. by Health Units	18,000	20,620	18,000	32,450
	20,500	25,800	21,000	39,970

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Certificates of Approval issued for private sewage systems:				
. by MOE	3,000	4,600	3,000	5,420
. by Health Units	11,600	14,450	11,500	19,650
	14,600	19,050	14,500	25,070
No. of complaints and failed private sewage systems investigated for abatement:				
. by MOE	700	1,070	700	1,530
. by Health Units	4,300	6,480	4,300	6,080
	5,000	7,550	5,000	7,610
No. of enforcement investigations related to Part VII E.P. Act requirements for private sewage systems	N/A	2	N/A	42
No. of consultations provided regarding lots where private systems are proposed	1,520	2,000	900	3,975
No. of new licences for private sewage system installers and sewage sludge haulers issued during year	175	220	175	266
No. of licences for private sewage system installers and sewage sludge haulers dropped during year*	130	20	130	8

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* Licences are mainly dropped due to business closures, not as a result of licence revocation.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of new septic tank, holding tank and proprietary aerobic sewage system use permits issued after installation	14,000	16,290	14,000	17,800
No. of failed private sewage systems corrected	1,400	1,600	1,400	2,800
No. of groundwater quality problems resolved which were attributable to private sewage systems	58	31	N/A	29
No. of charges laid for private sewage systems not in compliance with Part VII, E.P. Act requirements	N/A	1	35	0
No. of convictions obtained related to charges laid	N/A	1	N/A	0

Program Effects

The figures below enumerate the tertiary watersheds affected by private sewage systems. Detailed statistics on the 144 tertiary watersheds in the Province are provided in Appendix F.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds affected by private sewage systems:				
. Surface Water	6 (4%)	6 (4%)	6 (4%)	6 (4%)
. Groundwater	18 (13%)	19 (13%)	19 (13%)	19 (13%)
No. of new or ongoing confirmed groundwater quality problems attributable to private sewage systems	69	43	N/A	39

Private sewage systems are widely used in recreational and rural areas. Improper installation or maintenance of these systems may result in:

. reduced in-stream oxygen levels;
. nutrient enrichment, excessive aquatic growth and reduced aesthetics;
. bacterial or viral contamination; and
. destruction of fish habitat.

Localized impacts in the tertiary watersheds receiving private sewage system inputs are summarized below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with localized areas unsuitable for drinking water supply:				
. Surface Water	3	3	3	3
. Groundwater	18	19	18	16
No. of watersheds with areas requiring high water treatment costs:				
. Surface Water	3	3	3	3
. Groundwater	10	10	10	10

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with areas unsuitable for contact recreation	1	1	1	1
No. of watersheds with areas of reduced amenity for non-contact recreation	2	2	2	3
No. of watersheds with areas of poor quality or reduced fishing	3	3	3	5
No. of watersheds with downstream damages to special or unique features	2	2	2	3

In urban areas without communal sewage services, 36 communities were identified in 1986-87 as requiring substantial replacement of septic systems to protect public health. The systems generally are very old and were installed before provincial regulations were developed. The Ministry provides financial assistance for the replacement of these systems on a community basis. Further details are provided in the MBR Project on Sewage Servicing Infrastructure.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	2,786	2,853	5,228*	6,729*
. Person-Years	521	46	44	47
. Revenue ($000s)	150	165	160	204

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* The planned and actual expenditures increase between 1985-86 and 1986-87 is attributable to the inclusion of transfer payments to Health Units in addition to regular Ministry expenditures related to sewage sludge and private sewage systems.

MBR PROJECT ON SOURCE SEPARATION AND RECYCLING

OBJECTIVES

To assist municipalities, private firms and non-profit organizations in Ontario in establishing source separation and recycling projects with demonstrated long term viability as a means of reducing the amount of waste requiring landfilling or incineration.

DESCRIPTION

The resources assigned to this MBR project include:

- transfer payments for the establishment and initial operation of source separation projects,
- the person-years and budget of the Legal Services Branch related to the development of regulations and legislation for returnable carbonated soft-drink containers, and
- the person-years and budgets of the Waste Management Branch and the Regions related to source separation policy development and to the regulation of returnable carbonated soft-drink containers.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of municipal wastes generated in Ontario (10^3 Mg/yr)*	9,800**	11,350	9,900**	11,300
Total wastes generated in communities/offices with MOE funded source separation projects (10^3 Mg/yr)	350	320	680	550

* 1 Mg = 1 tonne.

** The 1984-85 Results and the 1986-87 Planned Results figures did not include non-hazardous solid industrial wastes.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total wastes generated in communities/offices with non-MOE funded source separation projects (10^3 Mg/yr)	1,540	1,540	1,540	1,620

Municipal wastes are defined as residential, commercial, institutional, and non-hazardous solid industrial waste. The estimates of wastes generated are based on average generation figures developed by the Waste Management Advisory Board and on Ontario population statistics.

Municipal wastes in Ontario are composed of the following materials amenable to recycling by source separation:

- Newsprint 9%,
- Glass Containers 5%,
- Ferrous Containers 3%,
- Kraft Paper (including cardboard) 10%, and
- Fine Paper 8%.

(1) MOE FUNDED PROJECTS

RESULTS

Operational Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of source separation proposals funded:				
. New	0	10	2	4
. From previous years	8	4	14	8

A listing of MOE funded source separation projects is provided in Appendix P.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total recovered products (10^3 Mg/yr):				
. Newsprint	13.9	17.5	26.3	25.8
. Corrugated Paper	2.2	3.0	6.2	0.7
. High Grade Paper	2.7	2.0	2.1	0.9
. Glass	1.5	2.4	6.5	6.6
. Metal	0.6	0.8	2.9	1.4
	20.9	25.7	44.0	35.5
Direct employment in source separation projects (person-years)	61	66	117	89
Community participation rates in projects	10 - 40%	10 - 40%	10 - 40%	10 - 40%
Project revenues ($000s)	1,560	1,667	2,121	2,079
Operating expenditures ($000s)	2,348	2,704	4,400	4,076

Program Effects

No. of self-sufficient projects	1	0	1	0
No. of firms using source separation materials	17	17	17	17
Recycling rate achieved for non-refillable soft drink containers*	Data base not developed			

* Environmental Protection Act, Regulation 622 requires a recycling rate of 50% to be achieved by November 1, 1988. Data collection related to the actual recycling rate began in the fall of 1986.

EFFICIENCY

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Operational Efficiency	Indicators not developed			
Program Efficiency				
Average revenue received for separated waste as a % of average cost	66%	62%	48%	51%

EFFECTIVENESS

Diversion rate*	6.0%	8.0%	6.4%	6.5%

(2) NON-MOE FUNDED PROJECTS

RESULTS

Operational Outputs

No. of source separation projects:

. New	6	4	N/A	0
. From previous years	47	50	N/A	47

A listing of non-MOE funded source separation projects is provided in Appendix Q.

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* Volume of wastes collected by source separation projects as a percent of total volume of waste generated in communities with source separation projects.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total recovered products (10^3 Mg/yr):				
. Newsprint	22.6	23.1	24.9	32.5
. Corrugated Paper	4.8	2.9	5.3	5.1
. High Grade Paper	1.1	0.9	1.3	1.2
. Glass	1.8	1.6	2.0	2.6
. Metal	0.3	0.4	0.3	1.0
	30.6	28.9	33.8	42.4
Direct employment in source separation projects (person-years)*	126	84	126	122
Community participation rates in projects	N/A	N/A	N/A	N/A
Project revenues ($000s)	N/A	N/A	N/A	N/A
Operating expenditures ($000s)	N/A	N/A	N/A	N/A
EFFECTIVENESS				
Diversion rate	2.0%	1.8%	2.2%	2.6%
RESOURCES				
. Expenditures ($000s)	793	660	1,931	4,494**
. Person-Years	5	3	9	9**

* Employment figures do not include volunteers.

** The increase in resources between 1985-86 and 1986-87 is mainly attributable to increases in source separation grants and the intensified Ministry efforts to plan and promote source separation and recycling activities.

MBR PROJECT ON RESOURCE RECOVERY

OBJECTIVE

To develop, demonstrate and assess the technology and economic viability of resource recovery, as a means of reducing the amount of waste requiring landfilling or incineration in Ontario.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to the legal review of resource recovery policies and the development of resource recovery contracts,

- the person-years and budget of the Waste Management Branch related to the operation of the Experimental Resource Recovery Plant (ERRP), and to the development of resource recovery policies and programs, and

- the person-years and budgets of the Regions related to the provision of information to the public and to municipalities on resource recovery initiatives, and to the development of resource recovery plans.

Resource recovery processes under ongoing review include:

- Shredding,
- Air Separation,
- Magnetic Separation,
- Screening,
- Incineration with Heat Recovery,
- Composting, and
- Paper Recovery.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Quantity of municipal waste generated (10^3 Mg/yr)*	9,800**	11,350	9,900**	11,300

Municipal wastes are defined as residential, commercial, institutional and non-hazardous solid industrial wastes. This estimate is based on average waste generation figures developed by the Waste Management Advisory Board and Ontario population statistics.

RESULTS

Operational Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of market development projects under way at the Experimental Resource Recovery Plant (ERRP)	12	12	12	9
No. of market development projects completed at the ERRP	N/A	4	N/A	0

A listing of market development projects is provided in Appendix R.

MOE terminated the agreement with Metropolitan Toronto, effective March 31, 1987, for operation of the ERRP because:

- the technical testing of equipment and the development of markets has been completed; and
- the Ministry plans to re-allocate the resources to promote low technology resource recovery through source separation, expanded financial assistance to source separation projects, and other measures.

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* 1 Mg = 1 tonne.

** The 1984-85 Results and 1986-87 Planned Results figures did not include non-hazardous solid industrial wastes.

Program Outputs

The following statistics relate to the Experimental Resource Recovery Plant.

	1984-85		1985-86		1986-87 Planned		1986-87 Actual	
	$000s	10^3 Mg/yr	$000s	10^3 Mg/yr	$000s	10^3 Mg/yr	$000s	10^3 Mg/yr
Waste receipts	1,982.0	141	1,758.0	129	1,920.0	140	1,817.0	133
Wastes processed		24		17		26		1*
Total recovered products:								
. Refuse Derived Fuel	-	1.7	0.9	0.1	-	-	-	-
. Ferrous	116.5	1.7	55.4	1.0	100.0	1.4	3.5	0.1
. Corrugated Paper	94.3	1.1	48.0	0.8	112.0	1.5	37.4	0.4
. Compost	11.5	1.6	3.4	0.3	20.0	2.0	-	-
. Baled Waste Newspaper	-	-	-	-	-	-	-	-
	$ 222.3	6.1	$ 107.7	2.2	$ 232.0	4.9	$ 40.9	0.5*

The following statistics relate to non-MOE Resource Recovery Projects.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of non-MOE operated resource recovery projects	2	2	2	1

* The ERRP's processing facilities were not operative, except in April 1986 due to shredder motor failure. The recovered products were obtained mainly from in-stock materials.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Total recovered products (10^3 Mg/yr):				
. Refuse Derived Fuel	N/A	N/A	N/A	N/A
. Ferrous	3.9	1.5	N/A	3.9
. Corrugated Paper	1.1	1.2	N/A	N/A
. Compost	N/A	N/A	N/A	N/A
. Baled Waste Newspaper	0.3	N/A	N/A	N/A
. Other	N/A	N/A	N/A	N/A
	5.3	2.7	N/A	3.9

Program Effects

One municipal resource recovery project being developed is a refuse derived fuel incinerator for Victoria Hospital in London, Ontario.

EFFICIENCY

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Operational Efficiency	Indicators not developed			
Program Efficiency				
Total recovered products as a % of wastes processed at the ERRP	25%	13%	19%	Not Applicable

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	4,245	3,902	5,554	3,437
. Person-Years	6	6	9	7
. Revenue ($000s)	2,247	1,879	1,900	1,902

MBR PROJECT ON PESTICIDES CONTROL

OBJECTIVE

To control the distribution, sale, storage and use of pesticides through the regulation and education of the pesticides industry, applicators, farmers, municipalities, and the public in Ontario in order to protect the natural environment and human health while allowing for the beneficial uses of pesticides.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to the development of termite control contracts and to legal enforcement actions under the Pesticides Act,
- the person-years and budget of the Water Resources Branch related to the sampling of drinking water supplies for pesticide residuals,
- the person-years and budget of the Hazardous Contaminants Coordination Branch related to pesticides regulatory and educational activities, termite surveys, and transfer payments for termite control,
- the person-years and budget of the Pesticides Advisory Committee,
- the person-years and budget of the Investigations and Enforcement Branch related to investigations of violations and the enforcement of the Pesticides Act,
- the person-years and budgets of Regional pesticides control officers, and
- the person-years and budget of the Environmental Approvals and Land Use Planning Branch related to the issuance of permits and licences to vendors and users of pesticides.

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of classified pesticides (est.)	4,200	4,200	4,200	4,200
Quantities of pesticides used in all Southern Ontario Great Lakes drainage basins (Mg/yr)* (est.)	8,400	8,400	8,400	8,400
No. of municipalities with termite infestations	N/A	26	N/A	26

RESULTS

Operational Outputs

No. of Licences and Permits issued and/or renewed:

. Vendors	3,983	4,327	4,500	3,093
. Operators	1,400	1,550	1,685	1,404
. Structural Exterminators	965	1,113	1,022	1,498
. Land Exterminators	8,441	9,581	10,382	9,811
. Water Exterminators	340	373	322	297
. Custom Sprayers**	655	675	685	665
. Water Permits	470	511	540	555
. Land Permits	845	945	1,045	1,380
. Structural Permits	176	270	360	115
	17,275	19,345	20,541	18,818

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* 1 Mg = 1 tonne.

** Custom sprayers are registered under the Pesticides Act and are not subject to annual renewal.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of local pesticides certification courses conducted	67	151	128	145
No. of examinations conducted	2,596	2,785	4,227	5,300
No. of audits of:				
. pesticides applications by aircraft, ground equipment or concentrated airblast	407	76	98	89
. container disposal practices	281	48	100	60
. licensed exterminator practices	213	109	160	94
. compliance with permit requirements	76	63	76	201
	977	296	434	444
No. of municipalities receiving termite grants	N/A	11	N/A	6
No. of properties treated for termite infestation	N/A	589	N/A	593
No. of enforcement investigations related to violations of the Pesticides Act	N/A	12	N/A	101

The Ministries of the Environment and Natural Resources have been collecting and testing sport fish in Ontario for pesticides, heavy metals, and organic contaminants since 1977, in selected lakes, rivers, and local areas in the Great Lakes. The cumulative number of waterbodies and tertiary watersheds tested as part of the "Sport Fish Testing Program" are given below:

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Cumulative no. of waterbodies tested for fish contaminants through the "Sport Fish Testing Program"	1,325	1,348	1,425	1,409
Cumulative no. of waterbodies tested for PCBs and organochlorine pesticides	394	428	469	564

Details on the health significance of contaminants in sport fish within specific waterbodies are provided in the "Guide to Eating Ontario Sport Fish, 1986". Detailed water quality information on the 144 tertiary watersheds in the Province can be found in Appendix F.

In addition to its involvement with the "Sport Fish Testing Program", the Ministry has undertaken a "Nearshore Young-of-the-Year Fish Contaminant Surveillance Program" since 1975 in 14 tertiary watersheds draining into the Great Lakes. Young-of-the-year spottail shiners are collected and tested for organochlorine contaminants and heavy metals. The bio-monitoring data are used to identify areas of concern for point source investigations, to assess temporal contaminant trends, and to identify emerging problems in the nearshore areas of the Great Lakes. Summary information is provided by tertiary watershed in Appendix S.

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of abatement investigations regarding aerial, ground, structural or aquatic applications of pesticides	644	513	600	490
No. of groundwater quality problems resolved which were attributed to pesticides	19	49	35	48
No. of charges laid related to violations of the Pesticides Act	N/A	23	N/A	128
No. of convictions obtained related to charges laid	N/A	4	N/A	35

Termite infestation problems exist in localized areas of Southern Ontario. Infestations are most severe in the City of Toronto and the Borough of East York where 75% of all treated properties are located. An inventory of municipalities which received termite grants in 1986-87 is provided in Appendix T.

Program Effects

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of private wells contaminated by pesticides	43	95	58	23*
No. of instances of indoor exceedences of permissible concentrations of pesticides	3	6	4	1
No. of instances of possible public health effects reported	Data base not developed			
No. of confirmed new or ongoing groundwater quality problems attributed to pesticides	37	40	78	48

Surface water monitoring data indicate few exceedences of water quality objectives for pesticides in use. Most exceedences of objectives are noted for pesticides now banned or severely restricted.

There is a high level of concern expressed by the public regarding the environmental and health effects resulting from pesticides use. Complaints and inquiries originate from all parts of the Province and have centred on licensing, application, storage and disposal practices.

In 1986-87, no sport fish tested for residual DDT and other organochlorine pesticides showed concentrations in exceedence of fish consumption guidelines. Concentration levels of pesticides and other organic contaminants have declined since 1976 in sport fish tested in the English-Wabigoon River System and the following Great Lakes areas: Ganaraska River, Credit River, Lake Huron (Point Edward to Grand Bend), Lake Superior (Superior Island), Lake St. Clair and Lake St. Francis.

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* In 1986-87, MOE ceased monitoring for pesticides in shallow wells which failed to meet the Ministry's construction or maintenance requirements.

In 1986-87, PCBs were detected in concentrations exceeding the IJC guidelines in young-of-the-year fish sampled in Lake Ontario, the Niagara River and Essex County. Mirex and BHC (Lindane) were not detected in young-of-the-year fish.

EFFICIENCY Indicators not developed

EFFECTIVENESS Indicators not developed

RESOURCES

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
. Expenditures ($000s)	3,145	3,634	3,664	3,449
. Person-Years	41	55	53	51
. Revenue ($000s)	342	360	335	486

MBR PROJECT ON ENVIRONMENTAL ASSESSMENT AND PLAN REVIEW

OBJECTIVE

To provide for the consideration and incorporation of environmental safeguards into public and private sector programs and undertakings in order to minimize detrimental effects on the environment and people of Ontario.

DESCRIPTION

The resources assigned to this MBR project include:

- the person-years and budget of the Legal Services Branch related to hearings before the Environmental Assessment Board (E.A. Board), the Ontario Municipal Board or related to joint hearings before the Consolidated Hearings Board (C.H. Board),
- the person-years and budgets of the Air Resources Branch, the Water Resources Branch, the Waste Management Branch, the Hazardous Contaminants Coordination Branch, the Regions and the Environmental Approvals and Land Use Planning Branch related to the review of specific projects and hearings under the Environmental Assessment Act (E.A. Act),
- the person-years and budgets of the Environmental Assessment Branch and of the Environmental Assessment Board and
- the person-years and budgets of the Regions and the Environmental Approvals and Land Use Planning Branch related to the provision of comments on provincial and municipal policies and plans circulated to the Ministry for review.

(1) ENVIRONMENTAL ASSESSMENT

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of projects undergoing pre-submission consultation	66	83	80	100

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of formal submissions made to the Minister:				
. Individual	7	9	20	6
. Class	6	3	5	1
	13	12	25	7
No. of project requests for designation under the E.A. Act	6	13	10	20
No. of project requests for exemption under the E.A. Act	28	31	20	41
No. of environmental assessments referred to the E.A. Board or the C.H. Board for hearings	3	2	6	1

RESULTS

Operational Outputs

No. of pre-submission consultations completed	13	19	25	10
No. of Completions of Reviews issued	9	7	25	12
No. of requests for designation processed	5	11	10	13
No. of requests for exemption processed	39	22	20	38
No. of E.A. Board or C.H. Board hearings completed	4	3	6	1
No. of audits conducted on approved environmental assessments	0	53	20	50

Program Outputs

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of approvals granted	6	9	25	9
No. of exemptions granted under S.29 of the E.A. Act	13	20	20	35

A summary of environmental assessment approvals is provided in Appendix U.

Program Effects

Benefits of the environmental assessment process include:

- the avoidance of future damages to the environment due to inadequate project planning,
- greater public confidence that major provincial and municipal undertakings are adequately protecting the environment, and
- cost savings to proponents through comprehensive planning and the existence of an accepted process for dealing with objections to the development.

EFFICIENCY

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
Operational Efficiency				
Average number of calendar days devoted to review of individual environmental assessments from formal submission to Notice of Completion of Review	609	373	N/A	365
Average number of calendar days from the time a formal Environmental Assessment document is submitted to the Minister until a notice of approval is issued	780	764	N/A	730

Program Efficiency — Indicators not developed

EFFECTIVENESS — Indicators not developed

(2) PLAN REVIEW

SCOPE

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of Plans submitted to the Ministry for review:				
. Official Plans	59	77	59	79
. Official Plan Amendments	599	718	599	970
. Plans of Subdivision and Condominium Plans	611	700	611	1,329
. Consents to Sever	930	1,000	930	1,650
. Ontario Pipeline Coordination Committee Plans (including pre-submission drafts and post-approval monitoring reports)	25	17	25	16
. Industrial Park Proposals	9	0	9	N/A
. Plans of Other Agencies	0	0	0	N/A

RESULTS

Operational Outputs

No. of Plans reviewed with comments:				
. Official Plans	59	77	59	68
. Official Plan Amendments	599	718	599	938
. Plans of Subdivision and Condominium Plans	611	700	611	1,264
. Consents to Sever	930	1,000	930	1,143
. Ontario Pipeline Coordination Committee Plans	25	17	25	16
. Industrial Park Proposals	9	0	9	N/A
. Plans of Other Agencies	N/A	0	N/A	N/A

Program Outputs

The Ministry provides plan review comments to approval agencies related to MOE's mandate for accordance with Policy 07-02. The proportion of comments accepted by the respective review agencies is high. For example, an audit conducted in 1984-85 showed that all Ministry comments in plan of subdivision and condominium plans had been accepted by the approval agency.

Program Effects

Benefits of the land use plan review process include the avoidance or minimization of:

- damages to the environment,
- conflicts between incompatible land uses, and
- costs of pollution abatement equipment and measures.

EFFICIENCY

Operational Efficiency

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
% Plans reviewed within requested time:				
. Official Plans	56	30	56	23
. Official Plan Amendments	54	54	54	56
. Plans of Subdivision and Condominium Plans	52	54	52	60
. Consents to Sever	N/A	N/A	N/A	45
. Ontario Pipeline Coordination Committee Plans	50	No reviews	50	85
. Industrial Park Proposals	100	No reviews	100	N/A

EFFECTIVENESS

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
% recommendations incorporated in approved plans:				
. Official Plans	95	95	95	92
. Official Plan Amendments	94	95	94	92
. Subdivision Plans and Condominium Plans	92	95	92	95
. Ontario Pipeline Coordination Committee Plans	100	Not applicable	100	100
. Industrial Park proposals	98	Not applicable	98	Not applicable

RESOURCES

. Expenditures ($000s)	4,776	5,454	6,035	6,264
. Person-Years	92	92	97	87

EMPLOYMENT EQUITY/AFFIRMATIVE ACTION - YEAR-END RESULTS: 1986-87

OBJECTIVES

To provide equal opportunity for employment, to integrate all modules and categories to a minimum of 30 percent female representation and to raise the level and diversify the occupational distribution of women.

SCOPE

MINISTRY EMPLOYEES:

MALE #1733	%76.6	FEMALE #530	%23.4	TOTAL 2263

REGIONAL EMPLOYMENT:

MALE #1045	%88.3	FEMALE #139	%11.7	TOTAL 1184

SPECIAL CORPORATE OBJECTIVES

1) Training/developing/recruiting/promoting women into senior management positions.

2) Training/developing/recruiting/promoting women into technology-related positions.

SPECIAL MINISTRY OBJECTIVES

1) Providing a two year training assignment for a female graduate in Civil or Chemical Engineering.

2) Training/developing/promoting women for Environmental Technician classifications.

RESULTS

Operational Outputs

Regular Ongoing Program Activities:

Employment Equity Advisory Committee activities and quarterly meetings, conferences and seminars, quarterly bulletin, counselling, updating MBR package and guide, providing information sessions to managers and women employees and reporting on program objectives, goals and results to senior management.

Special Initiatives: (To meet Ministry and Corporate Objectives)

1986-87

A Career Development Centre was held on a corporate basis and included two women from Environment and eight women from the following Ministries: MTC, Attorney General, Solicitor General, Tourism and Recreation, Correctional Services, Consumer and Commercial Relations, Government Services. They were from the 18 and 19 Management level and were assessed for potential in the following management skills: leadership, communication, planning and organization, decision making, problem analysis and synthesis and interpersonal. Feedback sessions were held with the participants and their managers and career action plans developed.

Program Outputs

Program Indicators	1986-87	
	Planned	Actuals
1) Accelerated Career Development Initiatives	19	23
2) Hire/Promotion Targets	24	35

Program Effects

1986-87

1) Female representation in under-represented modules/categories (less than 30%).

- Administration Module: at 37.11% (no longer under-represented).
- Professional Module: at 6% (.37% increase).
- Scientific/Professional Services Category: at 19.8% (1.5% increase).
- Technical Services Category: at 19% (.99% increase).
- Administrative Services Category: at 18.5% (2.8% increase).

2) Wage gap decreased 0.6%.

3) Staff training and development: female participation = 21%.
female % of training $ = 19%.

RECONCILIATION OF EXPENDITURES

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MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

($ 000s)/Person Years

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Regulation of Communal Water Supplies #1		Operation of MOE Water Supply Facilities #2		Water Services Infra-Structure #3		Reg of Comm Sewage Treat Facility Discharges #4		Oper of MOE Sewage Treatment Facilities #5		Sewage Services Infra-Structure #6		Surface and Groundwater Management #7		Management Indus-Point Sources of Water Poll #8		Management Non-Point Sources of Water Poll #9		Management of Trans-Boundary Water Poll #10	
ANALYSIS RESEARCH AND PLANNING	756.7	0.0	0.0	0.0	0.0	0.0	756.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	756.7	0.0	0.0	0.0	0.0	0.0
LEGAL SERVICES	36.5	0.6	36.5	0.6	51.1	0.9	59.9	1.0	36.5	0.6	51.1	0.9	14.6	0.3	148.9	2.6	59.9	1.0	74.5	1.3
CAPITAL MGT AND REVENUE (Part 2 of Financial and Capital Management Branch)	0.0	0.0	370.0	7.3	256.0	4.6	0.0	0.0	738.0	15.0	521.7	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PROG ADMIN (SUPPORT SERVICES)	30.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.3	0.5	0.0	0.0	30.3	0.5
AIR RESOURCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WATER RESOURCES	1724.7	25.3	0.0	0.0	243.9	4.8	3815.3	27.5	69.7	0.9	1010.4	0.6	400.7	6.0	3711.3	55.2	3675.9	38.6	1585.3	16.1
WASTE MANAGEMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LABORATORY SERVICES	2796.2	44.8	701.8	15.9	0.0	0.0	798.8	12.4	502.5	11.2	0.0	0.0	0.0	0.0	1665.7	22.2	5607.8	68.6	653.0	15.0
Laboratory Services Branch	2091.8	29.3	437.6	9.9	0.0	0.0	696.2	10.4	312.6	7.5	0.0	0.0	0.0	0.0	1233.3	14.4	5188.0	60.1	588.6	14.0
Northwest Lab	335.3	8.5	85.1	2.0	0.0	0.0	32.8	0.5	60.3	0.9	0.0	0.0	0.0	0.0	280.7	4.3	132.0	2.1	64.4	1.0
Southwest Lab	151.7	3.3	115.0	2.4	0.0	0.0	46.9	0.9	104.0	2.1	0.0	0.0	0.0	0.0	140.7	3.2	201.8	4.5	0.0	0.0
Southeast Lab	217.4	3.7	64.1	1.6	0.0	0.0	22.9	0.6	25.6	0.7	0.0	0.0	0.0	0.0	11.0	0.3	86.0	1.9	0.0	0.0

MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Regulation of Communal Water Supplies		Operation of MOE Water Supply Facilities		Water Services Infra-Structure		Reg of Comm Sewage Treat Facility Discharges		Oper of MOE Sewage Treatment Facilities		Sewage Services Infra-Structure		Surface and Groundwater Management		Management Indus-Point Sources of Water Poll		Management Non-Point Sources of Water Poll		Management of Trans-Boundary Water Poll	
	#1		#2		#3		#4		#5		#6		#7		#8		#9		#10	
INTERGOV REL & STRATEGIC PROJ	93.7	1.2	0.0	0.0	93.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	506.3	5.3	48.0	0.9	1365.6	13.4
. Office of the ADM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127.9	1.7	0.0	0.0	127.9	1.6
. Intergov Relations Office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	368.3	3.9
. APIOS Coordination Office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Niagara River Improvement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	293.7	3.0
. Detroit/St Clair/St Mary's	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	527.7	4.0
. Hazardous Contaminants	93.7	1.2	0.0	0.0	93.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	378.4	3.6	48.0	0.9	48.0	0.9
PROG ADMINISTRATION (REGIONS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17185.7	2.5	0.0	0.0	0.0	0.0
ENVIR. COMP. CORP.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	254.0	3.0	0.0	0.0	0.0	0.0
ENVIRONMENTAL ASSESSMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMPLIANCE & ENFORCEMENT	1115.9	22.1	365.2	10.8	467.0	9.8	979.0	19.7	606.1	11.3	448.7	8.5	288.5	4.4	4332.0	76.5	1721.9	32.0	237.9	2.3
. Northwestern Region	176.8	2.4	193.3	2.7	30.0	0.5	83.7	1.6	193.1	2.8	15.2	0.4	29.6	0.1	496.3	7.8	111.8	3.3	26.1	0.4
. Northeastern Region	175.8	3.8	13.0	0.3	165.0	3.7	60.0	0.9	2.0	0.1	120.0	2.3	0.0	0.0	940.0	15.2	151.0	3.0	2.0	0.0
. Southwestern Region	262.1	5.3	8.4	0.0	76.1	0.7	169.1	4.1	0.0	0.0	114.1	0.8	29.6	0.0	553.8	14.9	350.9	4.7	80.3	0.0
. West Central Region	85.7	1.0	34.9	0.1	15.9	0.6	193.5	1.9	136.4	3.3	0.0	0.7	47.6	1.4	469.5	6.8	88.8	2.1	123.7	1.9
. Central Region	197.8	3.1	6.7	5.8	50.9	1.1	192.1	5.4	0.0	0.0	101.7	1.1	73.8	0.0	672.1	11.5	469.1	8.3	4.7	0.0
. Southeastern Region	156.1	5.4	108.9	1.9	129.1	3.2	138.0	3.1	274.6	5.1	97.7	3.2	54.4	2.1	453.5	5.3	293.3	3.4	1.1	0.0
. Investigations & Enforcement	62.4	1.1	0.0	0.0	0.0	0.0	142.6	2.7	0.0	0.0	0.0	0.0	53.5	0.8	454.5	9.0	69.9	1.2	0.0	0.0
. Spills Action Centre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	292.3	6.0	187.1	6.0	0.0	0.0

RECONCILIATION OF EXPENDITURES

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MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Regulation of Communal Water Supplies		Operation of MOE Water Supply Facilities		Water Services Infra-Structure		Reg of Comm Sewage Treat Facility Discharges		Oper of MOE Sewage Treatment Facilities		Sewage Services Infra-Structure		Surface and Groundwater Management		Management Indus-Point Sources of Water Poll		Management Non-Point Sources of Water Poll		Management of Trans-Boundary Water Poll	
	#1		#2		#3		#4		#5		#6		#7		#8		#9		#10	
ENV APPROVALS & TECH SUPPORT	230.7	5.2	24.9	0.2	383.6	12.2	597.9	8.6	93.0	1.3	230.8	9.9	806.9	12.8	1208.5	18.2	1584.7	24.4	119.1	1.1
. Exec. Dir. Approvals & Eng	0.0	0.0	0.0	0.0	122.4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Northwestern Region	11.4	0.0	11.4	0.0	0.0	0.0	15.7	0.1	11.4	0.1	0.0	0.0	105.3	1.8	308.4	3.8	61.1	1.2	49.7	0.6
. Northeastern Region	1.0	0.0	0.0	0.0	0.0	0.0	16.0	0.2	0.0	0.0	6.0	0.1	66.0	1.0	230.0	3.9	94.0	2.1	1.3	0.0
. Southwestern Region	10.9	0.0	0.0	0.0	90.1	1.9	109.2	2.1	16.4	0.3	4.1	0.0	95.6	1.4	122.9	1.8	322.1	5.0	0.0	0.0
. West Central Region	43.4	0.4	13.4	0.1	25.0	0.2	56.8	0.5	60.1	0.9	20.4	0.2	101.9	2.0	168.6	0.6	292.2	3.1	46.8	0.5
. Central Region	2.5	1.0	0.0	0.0	2.5	0.3	74.8	1.2	0.0	0.0	2.5	0.0	358.9	4.8	22.4	2.7	259.2	5.6	0.0	0.0
. Southeastern Region	0.0	0.1	0.1	0.1	19.4	0.3	1.7	0.5	5.1	0.0	29.1	0.6	79.2	1.8	34.2	1.7	350.4	5.6	21.3	0.0
. Environmental Approvals	161.5	3.7	0.0	0.0	124.2	7.5	323.7	4.0	0.0	0.0	168.7	9.0	0.0	0.0	322.0	3.7	205.7	1.8	0.0	0.0
ENVIR. ASSES. BOARD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PROJECT ENGINEERING	453.3	5.8	464.6	3.5	47685.3	13.8	476.0	3.9	521.3	4.8	63729.0	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UTILITY OPERATIONS	135.5	0.0	28185.9	223.2	89.2	0.0	263.2	0.0	42497.0	450.9	124.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Northwestern Region	0.0	0.0	1183.0	13.9	0.0	0.0	0.0	0.0	1640.4	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Northeastern Region	4.0	0.0	1620.0	18.0	1.5	0.0	20.0	0.0	4778.0	49.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Southwestern Region	0.0	0.0	10285.7	95.2	0.0	0.0	0.0	0.0	6857.2	80.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. West Central Region	0.0	0.0	1831.8	18.7	0.0	0.0	0.0	0.0	8344.7	88.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Central Region	0.0	0.0	11292.7	54.6	0.0	0.0	0.0	0.0	15770.1	151.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Southeastern Region	131.5	0.0	1972.7	22.8	87.7	0.0	243.2	0.0	5106.6	64.8	121.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ONT WASTE MGT CORP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T O T A L S:	7373.5	105.5	30148.9	261.5	49269.8	47.3	7746.8	73.1	45064.1	496.0	66116.3	49.4	1518.7	23.5	29799.4	186.0	12698.2	165.5	4065.7	49.7
CAPITAL COMPONENT (C):					45969.6						61641.2									

RECONCILIATION OF EXPENDITURES

MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Management of Point Sources of Air Poll #11		Management Non-Point Sources of Air Poll #12		Mgt of Trans Boundary Air Poll & Atmos Deposition #13		Management of Munic Wastes Directed to Landfills #14		Management of Special Wastes #15		Use of Sewage Sludge/ Mgt of Subsurface Sewage System #16		Source Separation #17		Resource Recovery #18		Pesticides Control #19		Env Assessment and Plan Review #20		T O T A L S	
ANALYSIS RESEARCH AND PLANNING	1108.7	0.0	0.0	0.0	0.0	0.0	70.4	0.0	70.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3519.6	0.0
LEGAL SERVICES	74.5	1.3	36.5	0.6	148.9	2.4	236.6	4.1	89.1	1.5	112.4	1.9	21.9	0.4	21.9	0.4	74.5	1.3	74.5	1.3	1460.3	25.0
CAPITAL MGT AND REVENUE (Part 2 of Financial and Capital Management Branch)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1958.7	41.0
PROG ADMIN (SUPPORT SERVICES)	30.3	0.5	30.3	0.5	30.3	0.5	30.3	0.5	30.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	242.4	4.0
AIR RESOURCES	6700.1	64.4	1581.5	17.1	899.6	19.7	64.1	1.2	90.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3	2.3	9432.7	106.0
WATER RESOURCES	17.4	0.5	0.0	0.0	801.4	14.8	34.8	0.2	34.8	0.2	69.7	0.4	0.0	0.0	0.0	0.0	209.0	0.7	34.8	0.2	17439.1	192.0
WASTE MANAGEMENT	0.0	0.0	0.0	0.0	0.0	0.0	2850.7	17.4	2606.5	43.4	43.2	1.2	4461.4	8.2	3404.6	5.8	0.0	0.0	0.0	0.0	13366.4	76.0
LABORATORY SERVICES	2216.1	21.3	982.2	9.3	1245.4	38.5	1100.4	16.5	39.1	0.9	15.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18324.6	277.0
Laboratory Services Branch	2195.4	21.0	982.2	9.3	1224.7	38.2	1079.1	16.0	39.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16068.6	231.0
Northwest Lab	20.7	0.3	0.0	0.0	20.7	0.3	6.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1038.8	20.0
Southwest Lab	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.2	0.0	0.0	15.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	782.0	17.0
Southeast Lab	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	435.2	9.0

RECONCILIATION OF EXPENDITURES

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MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Management of Point Sources of Air Poll		Management Non-Point Sources of Air Poll		Mgt of Trans Boundary Air Poll & Atmos Deposition		Management of Munic Wastes Directed to Landfills		Management of Special Wastes		Use of Sewage Sludge/ Mgt of Subsurface Sewage System		Source Separation		Resource Recovery		Pesticides Control		Env Assessment and Plan Review		T O T A L S	
	#11		#12		#13		#14		#15		#16		#17		#18		#19		#20			
INTERGOV REL & STRATEGIC PROJ	182.5	2.0	108.9	1.4	5891.5	8.2	93.7	1.2	93.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1900.7	14.8	93.7	1.2	10472.0	52.0
. Office of the ADM	0.0	0.0	0.0	0.0	127.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	383.7	5.0
. Intergov Relations Office	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	368.8	4.0
. APIOS Coordination Office	0.0	0.0	0.0	0.0	5654.2	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5654.2	5.0
. Niagara River Improvement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	293.7	3.0
. Detroit/St Clair/St Mary's	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	527.7	4.0
. Hazardous Contaminants	182.5	2.0	108.9	1.4	108.9	1.4	93.7	1.2	93.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1900.7	14.8	93.7	1.2	3243.9	31.0
PROG ADMINISTRATION (REGIONS)	1138.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18323.7	5.0
ENVIR. COMP. CORP.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	254.0	3.0
ENVIRONMENTAL ASSESSMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1483.7	28.0	1483.7	28.0
COMPLIANCE & ENFORCEMENT	4051.0	68.3	722.4	12.6	110.8	1.1	2997.5	62.0	3475.3	71.6	1957.3	32.6	11.0	0.1	10.1	0.6	774.3	21.9	1252.5	18.8	25924.4	487.0
. Northwestern Region	102.2	1.6	40.5	0.6	26.1	0.4	259.6	3.1	182.5	4.1	131.6	3.8	0.0	0.0	0.0	0.0	0.0	1.2	85.1	1.2	2183.5	38.0
. Northeastern Region	460.0	6.2	16.0	0.3	2.0	0.0	370.0	8.1	360.0	5.8	284.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	130.0	2.8	3250.0	58.0
. Southwestern Region	748.2	10.7	63.4	1.4	63.4	0.1	481.9	8.8	545.3	11.2	152.2	1.4	8.5	0.0	8.5	0.0	283.2	5.6	228.3	2.3	4227.3	72.0
. West Central Region	834.3	19.1	50.8	1.4	15.9	0.6	314.1	5.4	371.2	6.8	63.5	1.6	0.0	0.0	0.0	0.0	126.9	3.1	199.9	3.2	3172.6	61.0
. Central Region	1006.8	17.2	288.2	4.2	0.0	0.0	711.9	18.3	632.9	15.1	672.4	10.7	0.0	0.0	0.0	0.5	0.0	5.0	418.2	5.7	5499.3	113.0
. Southeastern Region	295.3	3.5	116.4	2.0	3.4	0.0	380.7	9.1	470.6	9.1	352.6	4.7	2.5	0.1	1.6	0.1	132.5	2.5	159.8	3.2	3622.1	67.0
. Investigations & Enforcement	499.0	10.0	147.1	2.7	0.0	0.0	479.3	9.2	912.8	19.5	301.0	4.9	0.0	0.0	0.0	0.0	231.7	4.5	31.2	0.4	3385.0	66.0
. Spills Action Centre	105.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	584.6	12.0

MANAGEMENT BY RESULTS EXPENDITURES: 1986-87 ACTUALS

PROJECT TITLES: / ACTIVITY/ORGANIZATION	Management of Point Sources of Air Poll #11		Management Non-Point Sources of Air Poll #12		Mgt of Trans Boundary Air Poll & Atmos Deposition #13		Management of Munic Wastes Directed to Landfills #14		Management of Special Wastes #15		Use of Sewage Sludge/ Mgt of Subsurface Sewage System #16		Source Separation #17		Resource Recovery #18		Pesticides Control #19		Env Assessment and Plan Review #20		T O T A L S	
ENV APPROVALS & TECH SUPPORT	2498.9	44.8	1025.2	17.7	480.2	8.8	935.4	14.8	516.0	9.8	3910.2	6.3	0.0	0.0	0.0	0.0	490.2	12.4	2354.6	27.5	17490.8	236.0
. Exec. Dir Approvals & Eng.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.4	2.0
. Northwestern Region	299.9	3.6	31.3	0.5	66.8	1.5	15.7	0.4	4.6	0.9	0.0	0.0	0.0	0.0	0.0	0.0	89.4	0.0	101.2	1.5	1183.3	16.0
. Northeastern Region	390.0	7.2	0.0	0.0	235.0	4.3	130.0	1.6	90.0	1.8	19.0	0.4	0.0	0.0	0.0	0.0	110.0	1.9	22.0	0.5	1410.3	25.0
. Southwestern Region	148.8	2.1	110.6	2.4	96.9	1.8	71.0	1.5	16.4	0.3	17.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	132.4	3.1	1365.1	24.0
. West Central Region	385.6	7.2	126.9	2.0	6.7	0.1	118.5	1.4	133.6	1.8	25.0	0.4	0.0	0.0	0.0	0.0	45.1	0.7	71.8	0.9	1669.8	23.0
. Central Region	466.7	9.4	403.8	7.3	0.0	0.0	239.3	0.0	29.9	0.0	64.8	1.0	0.0	0.0	0.0	0.0	244.3	0.0	351.5	2.7	2523.1	36.0
. Southeastern Region	134.9	2.4	63.7	1.3	62.7	1.1	99.3	3.7	58.9	1.1	58.9	1.2	0.0	0.0	0.0	0.0	1.4	0.3	315.1	2.2	1335.4	24.0
. Environmental Approvals	753.0	12.9	288.9	4.2	12.1	0.0	261.6	6.2	182.6	3.9	3724.8	3.0	0.0	0.0	0.0	0.0	0.0	9.5	1360.6	16.6	7881.4	86.0
ENVIR. ASSES. BOARD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	873.1	8.0	873.1	8.0
PROJECT ENGINEERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	113329.5	49.0
UTILITY OPERATIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	620.9	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71916.3	678.0
Northwestern Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2823.4	30.0
Northeastern Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6439.5	68.0
Southwestern Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17142.9	176.0
West Central Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10176.5	107.0
Central Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27062.8	286.0
Southeastern Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	607.9	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8271.2	91.0
ONT WASTE MGT CORP.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14200.0	0.0
T O T A L S:	18017.5	285.6	4487.0	53.2	9608.1	94.0	8413.9	117.9	21318.3	132.2	6729.3	46.7	4494.3	8.7	3436.6	6.8	3448.7	51.1	6264.2	87.3	340011.3	2267.0

MANAGEMENT BY RESULTS - REVENUE FILE: 1986-87 ACTUALS

RECONCILIATION OF REVENUES

Page 1

($ 000s)

PROJECT TITLES: / REVENUE SOURCES	Regulation of Communal Water Supplies	Operation of MOE Water Supply Facilities	Water Services Infra-Structure	Reg of Comm. Sewage Treat Facility Discharges	Oper. of MOE Sewage Treatment Facilities	Sewage Services Infra-Structure	Surface and Groundwater Management	Management Indus-Point Sources of Water Poll	Management Non-Point Sources of Water Poll	Management of Trans-Boundary Water Poll
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
GOVERNMENT OF CANADA	0.0	0.0	0.0	951.3	0.0	4,955.9	0.0	0.0	1286.5	634.2
. Gr Lakes Agrmt (Sewage Fac)	-	-	-	-	-	4,955.9	-	-	-	-
. Gr Lakes Agrmt (Surveillance)	-	-	-	951.3	-	-	-	-	1286.5	634.2
REIMBURSEMENT OF EXPENDITURES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.2	0.0	0.0
. Clean-up Costs	-	-	-	-	-	-	-	105.2	-	-
FEES, LICENSES AND PERMITS	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0
. Pesticides	-	-	-	-	-	-	-	-	-	-
. Private Sewage	-	-	-	-	-	-	-	-	-	-
. Well Drillers	-	-	-	-	-	-	18.4	-	-	-
SALES AND RENTALS	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
. Resource Recovery Plant	-	-	-	-	-	-	-	-	-	-
. Other	-	-	6.2	-	-	-	-	-	-	-

MANAGEMENT BY RESULTS - REVENUE FILE: 1986-87 ACTUALS

RECONCILIATION OF REVENUES

($ 000s)

PROJECT TITLES: / REVENUE SOURCES	Regulation of Communal Water Supplies	Operation of MOE Water Supply Facilities	Water Services Infra-Structure	Reg of Comm. Sewage Treat Facility Discharges	Oper. of MOE Sewage Treatment Facilities	Sewage Services Infra-Structure	Surface and Groundwater Management	Management Indus-Point Sources of Water Poll	Management Non-Point Sources of Water Poll	Management of Trans-Boundary Water Poll
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
UTILITY SERVICES CHARGES	-	48,163.2	-	-	72,244.9	-	-	-	-	-
RECOVERY PRIOR YRS EXPENDITURE	-	-	226.4	-	-	339.5	-	20.0	-	-
MISCELLANEOUS	-	-	124.0	-	2.7	178.4	-	0.0	-	-
REPMT LOANS, ADVANCES, INVESTMT	0.0	0.0	22,607.9	0.0	0.0	36,407.0	0.0	820.8	0.0	0.0
. Term Agreements	-	-	15,431.4	-	-	23,147.1	-	-	-	-
. Service Agreements	-	-	7,173.3	-	-	13,255.1	-	-	-	-
. Others	-	-	3.2	-	-	4.8	-	820.8	-	-
PMTS TO TRUST & SPEC PURP ACCTS	0.0	0.0	558.6	0.0	0.0	838.0	0.0	0.0	0.0	0.0
. Sinking Fund	-	-	-	-	-	-	-	-	-	-
. Reserve Fund	-	-	558.6	-	-	838.0	-	-	-	-
. Waste Well Disposal Sec. Fund	-	-	-	-	-	-	-	-	-	-
. Waste Disposal Site Trst Fund	-	-	-	-	-	-	-	-	-	-
T O T A L S:	0.0	48,163.2	23,523.1	951.3	72,247.6	42,718.8	18.4	946.0	1,286.5	634.2

RECONCILIATION OF REVENUES

MANAGEMENT BY RESULTS - REVENUE FILE: 1986-87 ACTUALS

Page 3

($ 000s)

PROJECT TITLES: / REVENUE SOURCES	Management of Point Sources of Air Poll	Management Non-Point Sources of Air Poll	Mgt of Trans Boundary Air Poll & Atmos Deposition	Management of Munic Wastes Directed to Landfills	Management of Special Wastes	Use of Sewage Sludge/ Mgt of Subsurface Sewage System	Source Separation	Resource Recovery	Pesticides Control	Env. Assesssment and Plan Review	TOTALS
	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	
GOVERNMENT OF CANADA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,827.9
. Gr Lakes Agrmt [Sewage Fac]	-	-	-	-	-	-	-	-	-	-	4,955.9
. Gr Lakes Agrmt [Surveillance]	-	-	-	-	-	-	-	-	-	-	2,872.0
REIMBURSEMENT OF EXPENDITURES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.2
. Clean-up Costs	-	-	-	-	-	-	-	-	-	-	185.2
FEES, LICENSES AND PERMITS	0.0	0.0	0.0	0.0	0.0	195.3	0.0	0.0	485.5	0.0	699.2
. Pesticides	-	-	-	-	-	-	-	-	485.5	-	485.5
. Private Sewage	-	-	-	-	-	195.3	-	-	-	-	195.3
. Well Drillers	-	-	-	-	-	-	-	-	-	-	18.4
SALES AND RENTALS	0.0	34.0	0.0	0.0	0.0	0.0	0.0	1,901.9	0.0	0.0	1,942.1
. Resource Recovery Plant	-	-	-	-	-	-	-	1,901.9	-	-	1,901.9
. Other	-	34.0	-	-	-	-	-	-	-	-	40.2

RECONCILIATION OF REVENUES

MANAGEMENT BY RESULTS - REVENUE FILE: 1986-87 ACTUALS

($ 000s)

PROJECT TITLES: / REVENUE SOURCES	Management of Point Sources of Air Poll #11	Management Non-Point Sources of Air Poll #12	Mgt of Trans Boundary Air Poll & Atmos Deposition #13	Management of Munic Wastes Directed to Landfills #14	Management of Special Wastes #15	Use of Sewage Sludge/ Mgt of Subsurface Sewage System #16	Source Separation #17	Resource Recovery #18	Pesticides Control #19	Env. Assesssment and Plan Review #20	TOTALS
UTILITY SERVICES CHARGES	-	-	-	-	-	-	-	-	-	-	120,408.1
RECOVERY PRIOR YRS EXPENDITURE	-	-	-	-	-	-	-	-	-	-	585.9
MISCELLANEOUS	8.1	-	-	-	14.4	8.9	-	-	-	-	336.5
REPMT LOANS, ADVANCES, INVESTMT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59,835.7
. Term Agreements	-	-	-	-	-	-	-	-	-	-	38,578.5
. Service Agreements	-	-	-	-	-	-	-	-	-	-	20,428.4
. Municipal Loans	-	-	-	-	-	-	-	-	-	-	828.8
PMTS TO TRUST & SPEC PURP ACCTS	0.0	0.0	0.0	0.0	50.9	0.0	0.0	0.0	0.0	0.0	1,447.5
. Sinking Fund	-	-	-	-	-	-	-	-	-	-	0.0
. Reserve Fund	-	-	-	-	-	-	-	-	-	-	1,396.6
. Waste Well Disposal Sec. Fund	-	-	-	-	44.9	-	-	-	-	-	44.9
. Waste Disposal Site Trst Fund	-	-	-	-	6.0	-	-	-	-	-	6.0
TOTALS:	8.1	34.0	0.0	0.0	65.3	204.2	0.0	1,901.9	485.5	0.0	193,188.1

TECHNICAL

APPENDICES

APPENDIX A

LABORATORY TESTLOAD BY MBR PROJECT

1986-87 Actual

	No. of Tests
1. Protection of Drinking Water Supplies	
. Inorganic	212,789
. Organic	70,000
. Microbiological	125,479
	408,268
2. Operation of Ministry Water Supply Facilities	
. Inorganic	56,284
. Organic	27,100
. Microbiological	49,776
	133,160
3. Regulation of Communal Sewage Treatment Facility Discharges	
. Inorganic	123,477
. Organic	4,300
. Microbiological	35,226
	163,003
4. Operation of Ministry Sewage Treatment Facilities	
. Inorganic	114,850
. Organic	2,100
. Microbiological	7,539
	124,489

	No. of Tests
5. Management of Industrial and Commercial Point Sources of Water Pollution	
. Inorganic	102,827
. Organic	88,000
. Microbiological	6,855
	197,682
6. Management of Non-Point Sources of Water Pollution	
. Inorganic	454,463
. Organic	187,500
. Microbiological	52,088
	694,051
7. Management of Transboundary Water Pollution	
. Inorganic	103,672
. Organic	132,700
. Microbiological	9,900
	246,272
8. Management of Point Sources of Air Pollution	
. Inorganic	163,760
. Organic	8,800
. Microbiological	20
	172,580
9. Management of Non-Point Sources of Air Pollution	
. Inorganic	76,000
. Organic	18,100
	94,100

	No. of Tests
10. Management of Transboundary Air Pollution and Atmospheric Deposition	
. Inorganic	337,228
. Organic	2,500
	339,728
11. Management of Municipal Wastes Directed to Landfill	
. Inorganic	90,322
. Organic	53,000
. Microbiological	1,318
	144,640
12. Management of Special Wastes	
. Inorganic	4,500
. Organic	500
. Microbiological	0
	5,000

APPENDIX B

INVENTORY OF MUNICIPAL WATER TREATMENT FACILITIES UNDER THE DRINKING WATER SURVEILLANCE PROGRAM

1986-87 Actual

Niagara Falls
Lakeview (Mississauga)
Lorne Park (Mississauga)
Sarnia
Wallaceburg
Windsor
Kingston
Lake Huron (London)
R.C. Harris (Toronto)
R.L. Clark (Toronto)
Easterly (Toronto)
Burlington
St. Catharines
Hamilton
Elgin Area
Ottawa (2)
Belleville
Cornwall
Sudbury (2)
Sault Ste. Marie (2)
North Bay
Peterborough
Stoney Point
Amherstburg
Union
Oshawa
Fort Erie
Mitchell's Bay
Walpole Island
Port Dover
Kitchener
Brantford
Grimsby
Alvinston
Dresden
Harrow/Colchester
Port Stanley
Grand Bend

APPENDIX C

REMEDIAL MEASURES AT WATER AND SEWAGE TREATMENT FACILITIES WITH CRITERIA FAILURES

REMEDIAL MEASURES - MINISTRY SEWAGE TREATMENT PLANTS

	1986-87 PLANNED		1986-87 ACTUAL	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES
1. INFLUENT SEWAGE CHARACTERISTICS	13	1 engineering study phase 1 final design phase 1 funding under review 4 under construction 1 construction completed 1 facility operational 1 collection system deficiency under study 1 existing equipment/operation is being repaired 2 reduce winter bleeding	35	6 under discussion with municipality 3 engineering study phase 2 final design phase 5 funding under review 2 under construction 3 environmental assessment process 1 collection system deficiency under study 1 infiltration problems are being corrected 1 enforcing by-laws 2 phosphorus removal operation under review 1 start up difficulties being remedied 1 new equipment is being installed 1 existing equipment/operation is being modified 1 marginal failure - continue to maintain and monitor level of failed parameter closely 2 no action 3 other
2. COLLECTION SYSTEM PROBLEMS	3	1 final design phase 1 collection system deficiency under study 1 reduce winter bleeding	9	3 under discussion with municipality 3 collection system input monitoring 1 collection system deficiency under study 1 infiltration problems are being corrected 1 phosphorus removal operation under review
3. MAINTENANCE AND/OR OPERATION	0		5	2 operation and/or maintenance procedures being implemented 3 in plant sampling program is being modified

4. PROCESS AND/OR EQUIPMENT	5	1 under discussion with municipality 1 final design phase 1 enforcing by-laws 1 no action 1 other	14	1 under discussion with municipality 1 engineering study phase 1 final design phase 1 under construction 1 construction completed 1 change of phosphorus removal chemical 1 phosphorus removal operation under review 1 existing equipment/operation is being modified 2 existing equipment/operation is being repaired 1 upgrading completed 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 no action 1 other
5. SLUDGE REMOVAL/DISPOSAL	0		4	1 developing a new and/or improving the waste-disposal site 1 developing new and/or improved methods of dealing with sludge 2 upgrading sludge quality

6. OTHER	6	2 under construction 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 aesthetic problem only - no action planned 1 no action 1 process control improvements under way	47	1 under discussion with municipality 2 engineering study phase 1 final design phase 1 funding under review 3 under construction 4 construction completed 1 in plant sampling program is being modified 1 monitoring procedures and/or equipment being upgraded 1 change of phosphorus removal chemical 2 start up difficulties being remedied 1 conducting treatability studies 1 new equipment is being installed 1 existing equipment/operation is being modified 2 marginal failure - continue to maintain and monitor level of failed parameter closely 2 aesthetic problem only - no action planned 19 remedial measures being evaluated 3 no action 1 other
7. NOT RELATED TO PLANT PERFORMANCE	2	1 enforcing by-laws 1 installation of pre-treatment equipment undertaken	2	1 under discussion with municipality 1 engineering study phase
TOTAL	29		116	

REMEDIAL MEASURES - MUNICIPAL SEWAGE TREATMENT PLANTS

	1986-87 PLANNED		1986-87 ACTUAL	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES
1. INFLUENT SEWAGE CHARACTERISTICS	8	1 engineering study phase 1 under construction 1 installation of pre-treatment equipment undertaken 3 process control improvements underway 2 no action	10	2 under discussion with municipality 2 engineering study phase 1 final design phase 2 funding under review 1 in plant sampling program is being modified 1 phosphorus removal operation under review 1 no action
2. COLLECTION SYSTEM PROBLEMS	1	1 final design phase	18	4 under discussion with municipality 1 engineering study phase 3 funding under review 1 environmental assessment process 2 collection system deficiency under study 2 sewer separation underway 1 operator training is being provided 1 operation and/or maintenance procedures being implemented 1 new equipment is being installed 1 remedial measures being evaluated 1 no action

3. MAINTENANCE AND/OR OPERATION	2	2 final design phase	47	10 under discussion with municipality 4 funding under review 4 environmental assessment process 1 connection to other plant 2 collection system deficiency under study 3 program under review 3 operator training is being provided 2 operation and/or maintenance procedures being implemented 1 implementing an operations control program 1 in plant sampling program is being modified 2 monitoring procedures and/or equipment being upgraded 2 phosphorus removal operation under review 1 start up difficulties being remedied 2 new equipment is being installed 1 existing equipment/operation is being modified 1 upgrading sludge quality 1 marginal failure - continue to maintain and monitor level of failed parameter closely 5 remedial measures being evaluated 1 other

4. PROCESS AND/OR EQUIPMENT	2	2 final design phase	27	5 under discussion with municipality 1 engineering study phase 2 final design phase 3 funding under review 1 under construction 1 construction completed 2 environmental assessment process 1 connection to other plant 2 program under review 1 operation and/or maintenance procedures being implemented 1 implementing an operations control program 1 phosphorus removal operation under review 1 existing equipment/operation is being modified 2 existing equipment/operation is being repaired 1 marginal failure - continue to maintain and monitor level of failed parameter closely 2 remedial measures being evaluated
5. SLUDGE REMOVAL/DISPOSAL	0		7	2 engineering study phase 1 final design phase 1 connection to other plant 1 conducting treatability studies 1 new equipment is being installed 1 developing a new and/or improving the incineration facility
6. OTHER	4	1 under construction 1 facility operational 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 no action	3	1 engineering study phase 1 phosphorus removal operation under review 1 marginal failure - continue to maintain and monitor level of failed parameter closely

7. NOT RELATED TO PLANT PERFORMANCE	1	1 no action proposed - aesthetic only	4	1 funding under review 1 environmental assessment process 1 sewer separation underway 1 no action
TOTAL	18		116	

REMEDIAL MEASURES - MINISTRY WATER TREATMENT PLANTS

	1986-87 PLANNED		1986-87 ACTUAL	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES
1. RAW WATER CHARACTERISTICS	7	4 engineering study phase 1 no action proposed - aesthetic only 2 no action	20	2 engineering study phase 1 final design phase 1 construction completed 1 facility operational 2 program under review 2 reverting to other process 1 existing equipment/operation is being modified 1 existing equipment/operation is being repaired 1 implementing a plant performance monitoring program 1 marginal failure - continue to maintain and monitor level of failed parameter closely 4 aesthetic problem only - no action planned 2 no action 1 other
2. TREATED WATER CHARACTERISTICS	1	1 marginal failure - continue to maintain and monitor bacteria levels closely	3	1 distribution system monitoring 1 existing equipment/operation is being modified 1 no action
3. WATER QUANTITY	6	1 engineering study phase 2 under construction 3 no action	9	1 final design phase 1 construction completed 2 expansion and/or upgrading not planned 1 environmental assessment process 2 existing equipment/operation is being repaired 1 minor deviations - no remedial measures are required 1 aesthetic problem only - no action planned

4. MAINTENANCE AND/OR OPERATION	5	1 under discussion with municipality 1 funding under review 1 existing equipment/operation is being modified 2 aesthetic problem only - no action planned	4	1 monitoring procedures and/or equipment being upgraded 1 process control improvements underway 1 reverting to other process 1 existing equipment/operation is being repaired
5. PROCESS AND/OR EQUIPMENT	0		13	1 under discussion with municipality 1 engineering study phase 1 final design phase 2 process control improvements underway 2 reverting to other process 2 existing equipment/operation is being repaired 1 upgrading completed 1 remedial measures being evaluated 2 no action
6. OTHER	0		2	1 expansion and/or upgrading not planned 1 aesthetic problem only - no action planned
TOTAL	19		51	

REMEDIAL MEASURES - MUNICIPAL WATER TREATMENT PLANTS

	1986-87 PLANNED		1986-87 ACTUAL	
PRIMARY REASON FOR FAILURE TO MEET OBJECTIVES	FAILURES IDENTIFIED	REMEDIAL MEASURES	FAILURES IDENTIFIED	REMEDIAL MEASURES
1. RAW WATER CHARACTERISTICS	50	4 under discussion with municipality 7 engineering study phase 2 final design phase 3 funding under review 1 funding approval rejected - project halted 4 under construction 2 expansion and/or upgrading not planned 1 conducting treatablity studies 1 existing equipment/operation is being modified 2 minor deviations - no remedial measures are required 2 marginal failure - continue to maintain and monitor bacteria levels closely 1 marginal failure - continue to maintain and monitor level of failed parameter closely 16 aesthetic problem only - no action planned 1 remedial measures being evaluated 3 no action	55	7 under discussion with municipality 14 engineering study phase 1 final design phase 3 funding under review 4 under construction 1 construction completed 1 distribution system disinfection underway 1 in plant sampling program is being modified 1 conducting treatability studies 1 implementing a plant performance monitoring program 2 marginal failure - continue to maintain and monitor bacteria levels closely 6 marginal failure - continue to maintain and monitor level of failed parameter closely 1 remedial measures underway to prevent salt contamination 2 alternative water source under development 5 aesthetic problem only - no action planned 2 remedial measures being evaluated 3 no action

2. TREATED WATER CHARACTERISTICS	1	1 distribution system disinfection underway	14	1 under discussion with municipality 2 engineering study phase 1 final design phase 1 distribution system monitoring 1 distribution system deficiency under study 1 repair of distribution system underway 1 distribution system disinfection underway 1 water storage construction underway 1 operation and/or maintenance procedures being implemented 1 in plant sampling program is being modified 1 upgrading completed 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 aesthetic problem only - no action planned
3. MAINTENANCE AND/OR OPERATION	2	1 final design phase 1 monitoring of bacteria levels underway	24	4 under discussion with municipality 1 engineering study phase 1 final design phase 1 distribution system deficiency under study 5 program under review 1 operation and/or maintenance procedures being implemented 6 in plant sampling program is being modified 5 monitoring procedures and/or equipment being upgraded

4. PROCESS AND/OR EQUIPMENT	13	2 under discussion with municipality 1 engineering study phase 3 under construction 2 alternative water source under development 1 aesthetic problem only - no action planned 1 remedial measures being evaluated 3 no action	32	6 under discussion with municipality 2 engineering study phase 1 final design phase 5 funding under review 1 distribution system monitoring 2 distribution system deficiency under study 1 program under review 1 operation and/or maintenance procedures being implemented 4 in plant sampling program is being modified 1 monitoring procedures and/or equipment being upgraded 1 existing equipment/operation is being repaired 1 implementing a plant performance monitoring program 1 marginal failure - continue to maintain and monitor level of failed parameter closely 2 alternative water source under development 2 aesthetic problem only - no action planned 1 no action
5. OTHER	1	1 remedial measures being evaluated	3	1 engineering study phase 1 marginal failure - continue to maintain and monitor level of failed parameter closely 1 aesthetic problem only - no action planned
TOTAL	67		128	

APPENDIX D

STATUS OF INDIVIDUAL WATER AND SEWAGE PROBLEMS

STATUS OF INDIVIDUAL WATER SUPPLY AND WATER QUALITY PROBLEMS

1986-87 Actual

	Disbursement Projects	Up-Front Grant Projects	Low Cost Alternative Projects	Total Problems
Private Well Contamination	1	44	47	92
Resolved this year	1	11	14	26
Incomplete	0	18	13	31
Not Addressed	0	15	20	35
Communal Water Contamination	4	114	3	121
Resolved this year	1	20	2	23
Incomplete	2	16	1	19
Not Addressed	1	78	0	79
Water Shortages	7	119	15	141
Resolved this year	4	57	8	69
Incomplete	2	42	4	48
Not Addressed	1	20	3	24
Water Nuisance Problems	1	29	4	34
Resolved this year	1	7	1	9
Incomplete	0	11	0	11
Not Addressed	0	11	3	14
Local Development Delays	3	115	5	123
Resolved this year	2	23	0	25
Incomplete	1	52	0	53
Not Addressed	0	40	5	45
Other	4	42	5	51
Resolved this year	3	13	2	18
Incomplete	0	5	0	5
Not Addressed	1	24	3	28
TOTAL PROBLEMS	20	463	79	562
Resolved this year	12	131	27	170
Incomplete	5	144	18	167
Not Addressed	3	188	34	225

STATUS OF INDIVIDUAL SEWAGE PROBLEMS

1986-87 Actual

	Disbursement Projects	Up-Front Grant Projects	Low Cost Alternative Projects	Total Problems
Septic Tank Problems	11	53	36	100
Resolved this year	7	26	20	53
Incomplete	4	24	10	38
Not Addressed	0	3	6	9
Communal Sewage Collection Problems	5	107	0	112
Resolved this year	3	32	0	35
Incomplete	2	32	0	34
Not Addressed	0	43	0	43
Inadequate Sewage Treatment	10	74	0	84
Resolved this year	8	25	0	33
Incomplete	2	18	0	20
Not Addressed	0	31	0	31
Inferior Water Quality	0	30	18	48
Resolved this year	0	16	7	23
Incomplete	0	10	6	16
Not Addressed	0	4	5	9
Local Development Delays	1	104	4	109
Resolved this year	0	15	0	15
Incomplete	1	59	0	60
Not Addressed	0	30	4	34
Other	1	34	2	37
Resolved this year	1	8	0	9
Incomplete	0	7	0	7
Not Addressed	0	19	2	21
TOTAL PROBLEMS	28	402	60	490
Resolved this year	19	122	27	168
Incomplete	9	150	16	175
Not Addressed	0	130	17	147

APPENDIX E

SEWAGE TREATMENT FACILITY EFFLUENT GUIDELINES

1986-87 Actual

Treatment Level and Processes	Biological Oxygen Demand (BOD) (mg/L)	Suspended Solids (SS) (mg/L)	Total Phosphorus* (mg/L)
A. PRIMARY TREATMENT			
- without phosphorus removal	30% removal	50% removal	-
- with phosphorus removal	50% removal	70% removal	1.0
B. SECONDARY TREATMENT			
1. Conventional Activated Sludge			
- without phosphorus removal	25	25	-
- with phosphorus removal	25	25	1.0
2. Contact Stabilization			
- without phosphorus removal	25	25	-
- with phosphorus removal	25	25	1.0
3. Extended Aeration			
- without phosphorus removal	25	25	-
- with phosphorus removal	25	25	1.0
4. Continuous Discharge Lagoon			
- without phosphorus removal	30	40	-
- with phosphorus removal	30	40	1.0
5. Seasonal Retention Lagoon			
- without phosphorus removal	30	40	-
- with phosphorus removal by batch chemical dosage	25	25	1.0/0.5
- with phosphorus removal by continuous chemical dosage	30	40	1.0
6. Physical Chemical Treatment	25	25	1.0

* Effluent design objectives are used for total phosphorus since effluent guidelines are not available.

APPENDIX F

SURFACE AND GROUNDWATER QUALITY EVALUATION BY TERTIARY WATERSHED

SURFACE AND GROUNDWATER QUALITY EVALUATION BY TERTIARY WATERSHED

The evaluation of the 144 tertiary watersheds in the Province utilize this structure and coding system.

MAIN POLLUTION SOURCES

14 POSSIBILITIES:

Ag = Agriculture
In = Industrial/ Manufacturing Discharges
Ur = Urban Runoff/ Stormwater Discharges
STP = Sewage Treatment Facility Discharges
Pr = Private Sewage/ Recreational Practices
At = Atmospheric Deposition
L = Landfill Site Leachates
Trans = Specific, non-Ontario source
S = Storage Facility Leaks
R = Road Deicing Application
Mi = Mineral Extraction (drilling, mining)
WW = Water Well Drilling
D = Dredging/Dredged Spoils Disposal
O = Other

2 RECEPTOR POSSIBILITIES:

1 = Surface Water
2 = Groundwater

Example
Ag-1= Agricultural source; Surface Water as Receptor

MAIN PROBLEM PARAMETERS

19 POSSIBILITIES:

1) BOD
2) Suspended Solids
3) Dissolved Solids
4) Nutrients
5) Metals
6) Bacteria or Viruses
7) Acidity
8) Radionuclides
9) Organics
10) Ammonia
11) Chlorine
12) Cyanide
13) Phenolics
14) Sulphates
15) Chlorides
16) Arsenic
17) Pesticides
18) Nitrates
19) Other

ENVIRONMENTAL EFFECTS

12 POSSIBILITIES:

a) Low dissolved oxygen
b) Excessive aquatic growth
c) Bacterial or viral contamination
d) Acidification
e) Poor aesthetics (objectionable deposits, odours, foaming, colour, etc.)
f) Fish kills
g) Destruction of fish habitat or the aquatic ecosystem
h) Toxicity
- to fish and other aquatic life
- to wildlife
- to domestic livestock

i) Fish contamination
- tainting to flesh
- limit on consumption required

j) Terrestrial vegetation and crops
- toxicity
- tainting
- limit on consumption required

k) Groundwater contamination
l) Other

MAIN IMPACTS

9 POSSIBILITIES

1) Cannot be used as drinking water supply
2) High water treatment costs
3) Contact recreation restricted
4) Non-contact recreation affected
5) Poor quality or reduced fishing (commercial, sport)
6) Special or unique features of watercourse damaged
7) Cannot be used for livestock watering
8) Cannot be used for irrigation
9) Other

STATUS OF ENVIRONMENTAL PROTECTION EFFORTS

4 POSSIBILITIES:

a) Meets requirements specified by the relevant standard
b) Abatement is required to meet existing standards, guidelines or criteria
c) Additional regulatory programs/ policies are required
d) Enforcement planned or underway

SURFACE AND GROUNDWATER QUALITY EVALUATION BY TERTIARY WATERSHED

NORTHWESTERN REGION

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BD 31 Lake Superior Tributaries (from Lake Superior Prov. Park to Pukaskwa National Park)	At-1 STP-1 Pr-1	7 4 4	d b b	5 6 6	c a a
Comments: - Some lakes and streams have been measured to have pH less than 5.2 or alkalinity of 0 for short periods of time. - A small area at the mouth of Michipicoten River has a eutrophication problem. - Odour problems have been documented from Wawa waste treatment facilities (spring).					
2BC 30 Lake Superior Tributaries (Pukaskwa National Park)	At-1	7	d	5	c
Comments: - Three lakes in Pukaskwa National Park are acidified. Studies of 6 monitored streams suggest the acidification is directly related to precipitation. Studies are under way to determine the long-term impacts associated with atmospheric deposition in the Park.					

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BB Pic River and 2 other Lake Superior Tributaries	In-1	3, 5, 10	a, g, h	4, 5, 6	a, d
Comments: - A lengthy period of operation by two base metal operations in Manitouwadge has resulted in the formation of a chemocline in Mose Lake which has not allowed natural destratification. - The improved operations of Noranda (GECO) Mines and the closure of Wilroy Mines are not expected to result in restoration of natural lake conditions.					
2BA 1. Lake Superior Peninsula Harbour	In-1	13, 5	i, h	5, 4	b, d
Comments: - The pulp mill owned and operated by James River Corporation at Marathon has not been meeting the toxicity requirements set by MOE. A submerged diffuser outfall is in place. - In general, existing water supplies and recreational uses are not adversely impacted. The recent completion of the STP in Marathon has alleviated earlier concerns regarding water quality. Methods to improve toxicity of the James River effluent are under investigation. - A draft Remedial Action Plan for the Peninsula Harbour Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by January 1989.					

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BA (continued)					
2. Lake Superior Jackfish Bay	In-1	13, 2, 6, 1, 9	c, e, i, g, h, a	5, 4	b, d
Comments: -	Kimberley-Clark of Canada Ltd. has not been able to meet effluent requirements since the start-up of the new mill. A Control Order was issued in 1987. The Control Order is aimed at ensuring compliance with suspended solids, BOD and toxicity requirements by 1989.				
-	A draft Remedial Action Plan for the Jackfish Bay Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by February 1989.				
2AD					
Nipigon River	No water quality problems				
2AC, 2AE					
23 Lake Superior Tributaries:					
1. Nipigon Bay	In-1	3, 13, 6, 1	a, c, i, e, h	5, 4	b, d
Comments: -	The combined effluent from Domtar Packaging and the Red Rock WPCP is in compliance with the suspended solids, BOD and fish toxicity requirements. Domtar has recently been modernized which has improved wastewater treatment. A new Control Order requires the company to address reducing the size of the effluent mixing zone.				
-	A draft Remedial Action Plan for the Nipigon Bay Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by March 1989.				

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2AC, 2AE (continued)					
2. Thunder Bay	In-1	1, 2, 13, 6, 5	a, c, i, e, g, h	5, 4	d
	Ur-1	2, 6	-	3	-
	STP-1	2, 4, 1	-	6	d

Comments: - At present, some industrial effluents are not meeting MOE requirements. However, improvements in plant operations and pollution abatement facilities should lead to a general decrease in industrial loadings of BOD and suspended solids into the Bay. New Control Orders addressing BOD discharges were served to three Abitibi-Price paper mills in 1984.

- The completion of phosphorus removal facilities at the Thunder Bay Wastewater Treatment Plant has resulted in improved removal efficiencies for BOD and suspended solids.

- A draft Remedial Action Plan for the Thunder Bay Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by March 1989.

2AB Kaministiquia River - 5 Lake Superior Tributaries	In-1	1, 2	a, g, e	1, 4, 5	b, d

Comments: - BOD continues to be the single most critical problem in the Kaministiquia River and its delta owing to its limited assimilative capacity. However, both Great Lakes Forest Products and Industrial Grain Products are in compliance with BOD requirements in recently expired Control Orders. Combined BOD loadings have been reduced from 136 tonnes to 43 tonnes per day. The former Control Orders will be reviewed during 1986-87.

- The Kaministiquia River has been selected as a MISA pilot site.

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2AA 8 Lake Superior Tributaries	No discharges of environmental significance				
5PA - 5PB Upper Rainy River	Recent studies concerning acidification potential of the Upper Rainy River basin have led to the conclusion that related problems are not imminent.				
5PC Lower Rainy River (Fort Frances Area)	In-1 Ag-1 STP-1	2, 4, 6 4 b 4	g, c, b - b	5, 3 - -	b, d - -
5PD Lake of the Woods Drainage	A study is underway to evaluate the significance of lakeshore development on water quality.				

Comments:
- Bacteriological levels in the Rainy River, which are caused by pulp and paper mill discharges, are very high. Investigations are ongoing to determine possible health risks.
- Abatement measures at Boise Cascade, Fort Frances have resulted in improved effluent toxicity and BOD loadings. Apparent improvement in water quality has been noted in recent years.
- The 1985 discovery of 2,3,7,8 TCDD in Rainy River fish has prompted a major international investigation into potential sources.

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
5PE					
Winnipeg River (from Lake of the Woods to the Manitoba border)	In-1	1, 2, 9, 6, 2	h, g	5	b, d
	STP-1	6, 1, 2	c	3	a, d
Comments: -	Owing to the substantial assimilative capacity of the Winnipeg River, current effects on water quality resulting from high bacteria and BOD are localized. A significant reduction in suspended solids loadings from the Boise Cascade pulp and paper operation is resulting in improved conditions. A Control Order requires the company to further reduce discharges.				
5QB					
Lac Seul Drainage	No discharges of environmental significance				
5QC					
1. Pakwash River	Mi-1	2, 5, 12	g, h	4, 5	b, d
Comments: -	The Griffith Mine has ceased operations at Ear Falls. The tailings disposal area is expected to be covered by high water levels in Bruce Lake. This will result in turbidity problems in Bruce and Pakwash Lakes and the English River.				

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
5QC (continued)					
2. Balmer Lake Balmer Creek	Mi-1	12	h	5	b, d
Comments: -	Dickenson and Campbell Red Lake Mines have discharged tailings and effluents to Balmer Lake for some time. Control Orders have been issued. Very high concentrations of cyanide develops in Balmer Lake during ice cover. A fish kill occurred in 1985 in Balmer Creek. The outflow of Balmer Lake was controlled in 1987 when cyanide levels were high.				
5QD Wabigoon River	In-1	5, 12, 6	i, a, e	5, 2	b, c
Comments: -	Historical deposits of mercury in the Wabigoon River continue to influence the fisheries in the English River System. A Federal-Provincial study, released in 1985, addressed potential remedial measures.				
-	Because of the low assimilation capacity of the Wabigoon River, current BOD loadings and sediment oxygen demand result in anoxic conditions in large stretches of the river system above Clay Lake.				
-	Great Lakes Forest Products has been operating a traditional secondary treatment system since the end of 1983, resulting in significantly improved effluent quality.				
5QE Lower English River	No discharges of environmental significance				

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
5R Lake Winnipeg Tributaries	No data available				
4A Hayes River 4B Hudson Bay Tributaries between Nelson and Severn Rivers 4C Severn River 4D Winisk River and Hudson Bay Tributaries 4E Hudson Bay and James Bay Tributaries between Winisk and Attawapiskat Rivers		No discharges of environmental significance			

NORTHEASTERN REGION

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2EA 19 Georgian Bay Tributaries (northern Georgian Bay)	At-1 L-2	7 13	g, d k	5, 6 1	c b
Comments: -	Some lakes or streams in the area have been measured to have pH of less than 5.2 or with alkalinity of 0. Consequently, fisheries problems are expected. Countdown on Acid Rain program may resolve some problems long term.				
2DD French River and Pickerel River	Ur-1 Ag-1 S-2 L-2	6, 4, 5 4, 2 19 (gasoline) 10, 13, 5	c, b b, e e e, k	3 5 1 5	b b, c b b, d
Comments: -	Urban drainage contamination has resulted in closing of some beaches on Lake Nipissing. Beaches near North Bay are similarly affected (Chippewa Creek). Evaluation of beach monitoring data took place in 1984-85.				
-	The Veuve River is degraded by agricultural runoff for 10 to 20 km before entering Lake Nipissing.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2DC	At-1	7	d, g, h	5	c
Sturgeon River	In-1	1, 2, 6	e		b

Comments:
- Some lakes and streams in the area have fisheries problems as a result of acidification. Work co-ordinated with MNR is required to define the problems.
- Six km of the lower Sturgeon River are affected for short periods of the year by discharges from MacMillan Bloedel at Sturgeon Falls. A program is in place to maintain dissolved oxygen at greater than 47% saturation.
- Sudbury Environmental Study, released in 1985, shows improvement in water quality in some study lakes.
- Countdown Acid Rain program may resolve some problems long term.

2DB	In-1, Mi-1	5	g, h	5	b, d
Lower Wanapitei River	At-1	7	d	-	c
	R-2	15	k	9 (taste)	-

Comments:
- Portions of Romford Creek and Coniston Creek experience severe problems with industrial drainage and tailings discharges along with atmospheric metal loadings and runoff from old industrial fume kill zones. Revegetation efforts, which are under way, will reduce erosional impacts in the long-term.
- Sudbury Environmental Study, released in 1985, shows improvement in water quality in some lakes studied.
- Road de-icing problems are usually solved shorty after winter has ended. The problem remains because new or recurring problem areas are reported each year.
- Countdown Acid Rain program is in place and may have long term benefits.

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2DA Upper Wanapitei River	At-1	7	d, g, h	5	c

Comments: - Some lakes and streams in the area have fisheries problems from acidification. Work co-ordinated with MNR is required to better define and solve the problems.

- Sudbury Environmental Study, released in 1985, documents improvement in water quality in some lakes studied. Further monitoring is planned.

2JE Lake Temiskaming - Ottawa River	Ag-1 Mi-1	4 5	b, c g	4 1, 5	b, c d, c

Comments: - Phosphorus removal installed in WPCP at New Liskeard and Haileybury.

- Wabi River and several other small streams have been degraded by agricultural runoff. Work with Ministry of Agriculture is required to solve the problem.

- The Cobalt mining camp has left serious mercury and arsenic contamination in localized areas, especially Farr Creek. Limited consumption of fish is recommended from some lakes in the area.

- A swimming area in vicinity of Town of Mattawa shows occasional elevated bacterial levels. The cause is believed to be local land use practices.

- A spill of zinc concentrate (1970s) continues to leach zinc to groundwater and Four Mile Creek in concentrations that may cause fisheries problems in spite of extensive clean-up efforts. Water quality monitoring to evaluate improvements is continuing.

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2JD Montreal River	At-1	7	g, d	5, 6	b, c
Comments: -	Several lakes and streams have fisheries problems that are believed to be associated with acidification. Work co-ordinated with MNR is required to better define problems and to reduce the environmental impacts.				
-	Countdown on Acid Rain program should reduce impacts in the long term.				
2JC Blanche River	Ag-1 STP-1	4, 2 4	b, e b, e	4 4	b, c a
Comments: -	The Blanche River exceeds phosphorus guidelines for 30 to 50 km due to erosion and agricultural runoff.				
-	Eutrophication is a problem in Round Lake and Murdock Creek.				
-	Phosphorus removal was initiated in 1981 for Kirkland Lake. Improvements in water quality have been documented in Round Lake. Water quality improvement continue to be monitored.				
2CG Manitoulin Island	Ag-1	4	b	-	c
Comments: -	Agricultural drains and runoff have caused minor problems in some localized areas.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CF					
1. Junction Creek (major tributary to Spanish River)	In-1, Mi-1	4, 10, 5	g, h, a	5, 4, 1	b, c, d
	STP-1	4, 1	g, h, a	5, 4, 1	b
	Ur-1	4, 5	e	5	b
	R-2	15	k	1	d
Comments: -	Junction Creek receives many municipal discharges and large industrial discharges, plus urban drainage and aerial loadings of metals from the mining industry. Abatement is planned and under way in some places; more will be required in the future.				
-	Phosphorus removal has been implemented at Sudbury STP.				
-	Garson Municipal well problems have been resolved.				
2. Vermilion River (major tributary to Spanish River)	R-2	15	k	-	d
	STP-1	4	b	-	a
	At-1	5	-	-	-
Comments: -	During low flow periods, localized eutrophication reduces the appeal of Vermilion River to recreational users.				
-	Countdown Acid Rain program is expected to reduce metals loading in the long term.				
3. Onaping River (major tributary to Spanish River)	Mi-1	5	g, h	5	c
	S-2	15	k	9 (taste)	d
Comments: -	Moose Creek (drainage from Inco and Falconbridge tailings) affects the river for approximately 16 km. Some lakes in this watershed are acid sensitive.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CF (continued)					
4. 7 North Channel tribs. & minor tribs. to Spanish River	At-1	7, 5	d, g	5	c
Comments: - Several lakes and streams have fisheries problems associated with acidification and/or elevated metal concentrations. Efforts together with MNR are required to better define the problems.					
- Sudbury Environmental Study, released in 1985, shows improved water quality in some of the lakes studied.					
- Countdown Acid Rain program is expected to have localized benefit in the long term.					
2CE	In-1	-	-	-	a
Spanish River	D-1	5	-	-	-
Comments: - The Spanish River is affected by the discharge from E.B. Eddy for 50 km downstream. Abatement has been accomplished through a Control Order issued to the company. The company was granted government incentives under the Canada-Ontario Pulp and Paper Facility Improvement Program and has installed and operated a number of water pollution abatement systems since December 1983. These abatement measures have eliminated fish tainting and toxicity in the effluent. Fish tainting studies are planned for 1987. An attempt to provide higher flows during summer is being formulated and a low flow augmentation study (MOE, MNR, E.B. Eddy and INCO) has been completed. Water management plans may be introduced through an MNR initiative.					
- A major loss of black liquor occurred in July, 1983. Court case is ongoing.					
- Dissolved oxygen objectives have been met since the introduction of new treatment facilities in December 1983.					
- A draft Remedial Action Plan for the Spanish River Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by June 1987.					

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CD					
4 North Channel Tributaries	Mi-1	7, 10	g, d, h	5, 2, 4	b, d
	STP-1	4	b, e	5, 2, 4	a
	Ur-1	4	b	5	d
Comments: -	Portions of the Serpent River are affected by uranium discharges and discharges that occurred before abatement took place. Water quality is improving in these areas.				
-	Elliot Lake, Esten Lake and Angel Lake were degraded by municipal discharges in the past; water quality improvements with recent abatement efforts have been documented.				
-	A field study identified periodic ammonia toxicity problems in the upper Serpent River and Westner Lake.				
2CC					
Lower Mississagi River	At-1	7	-	-	c
Comments: -	No effects monitored at this time.				
2CB					
Upper Mississagi River	At-1	7	d	-	c
Comments: -	Some lakes or streams in the area have been measured to have pH less than 5.2 or with alkalinity of 0, for short periods of time, as a result of acidic deposition.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CA					
1. 14 St.Mary's River North Channel Tributaries	In-1	13, 12, 10	h, g, e	5	b, d
	At-1	7	-	-	d
	R-2	15	e	1	d
	Pr-2	18	k	1	d
Comments: -	Some of the smaller tributaries of the St. Mary's River in the urban and industrial areas have been degraded from their natural conditions. Some lakes and streams are acid sensitive but no effects have been monitored.				
2. St. Mary's River	In-1-2	9,10,12,13,5,19	k, e, g	1, 3	b, c, d
	STP-1	6	c	3,	b, d
	Ur-1	6	c	3	a
	WW-2	15	k	1	d
	L-1	-	-	-	b
	D-1	5, 13	g	5	b
Comments: -	Major sources of pollution to the St. Mary's River are Algoma Steel, St. Mary's Paper, the City sewage treatment plant and sewer system overflows.				
-	Disposal of wastes from Algoma Steel potentially impact on surface and groundwater. A program of hydrogeological and surface water testing by Algoma Steel is under way.				
-	A new Control Order was issued to Algoma Steel Corp. Ltd. covering all outstanding water contaminants.				
-	Phenolic levels in the river during 1983, the lowest since 1970, approached Provincial water quality objectives. This reduction is due to increased river flows along the Ontario shore resulting from the newly commissioned hydroelectric power plant, and also is due to decreased production at the steel mill.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2CA (continued) 2. St. Mary's River					
Comments: - St. Mary's Paper has installed a new clarifier and a diffuser outfall to reduce suspended solids and BOD loadings and to facilitate rapid mixing in the river. - The expansion of municipal pumping station capacity in 1978 led to a reduction of overflows and some improvements in river quality. - A new sewage treatment facility for West End has been constructed and is operational. Reduced overflows are expected and will alleviate loadings from the existing plant. Also, by 1986 a new water supply for the city will be completed. - Deep well drilling tapped saline groundwater and contaminated the shallow aquifer being used for private water supplies in the Village of Echo Bay. All deep wells have been plugged. Salt levels are declining. - Transboundary pollution in the Lake George Channel (U.S. side) is attributable to discharges from Algoma Steel and the Sault Ste. Marie STP. - A program of water quality monitoring is under way. A draft Remedial Action Plan was submitted to the IJC in 1985. - As part of a bi-national/Upper Great Lakes Connecting Channels study, the river ecosystem is being investigated. A final report is expected by Fall 1988.					
2BF 22 Lake Superior Tributaries (southeast Lake Superior)	At-1	7	-	-	c
Comments: - No effects monitored at this time. - Countdown Acid Rain may have long term benefits.					

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2BE 21 Lake Superior Tributaries (Lake Superior Provincial Park area)	At-1	7	d	5	c
Comments: - Some lakes and streams in the area have been measured to have pH less than 5.2 or alkalinity of 0 for short periods of time. - Countdown Acid Rain program may produce benefits in the long term.					
2BD 31 Lake Superior Tributaries (Magpie River)	At-1 STP-1	7 4, 19 (hydrogen sulphide)	- e, b	- 6	c b
Comments: - In recent years winter anoxic conditions in Wawa sewage lagoons cause odour problems downstream. Nutrient losses to Magpie River cause localized growth of nuisance algae. Wawa is presently converting the lagoons to aeriated lagoons with phosphorus removal. - Countdown Acid Rain program may produce benefits in the long term.					
4F Attawapiskat River	No discharges of environmental significance				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4G Lower Albany River and James Bay Tributaries between Attawapiskat and Moose Rivers	No discharges of environmental significance				
4J Upper Missinaibi River					
4K Kwataboahegan River					
4LA Upper Mattagami River	R-2	15	e	1	d
4LB Middle Mattagami River	In-1	1	a	5	a
	Mi-1	5	g, h	5	d

Comments: - Malette Paper Mill at Smooth Rock Falls is the major source affecting the Mattagami River for 5 km downstream. A Control Order is in place and should resolve some of the problems if completed satisfactorily. A mathematical dissolved oxygen model predicting the relationship between river oxygen concentrations, mill BOD load and flow was completed in 1983-84. Additional abatement measures may be required to meet the dissolved oxygen objectives under all conditions.

- Leachate bearing toxic metals from the abandoned Kam-Kotia mine is degrading water quality in the Kamiskotia River basin. Joint MOE/MNR action is planned.

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4LC - 4LE Groundhog River and Upper Kapuskasing River	No data available				
4LF Lower Kapuskasing River	In-1 O-1(logdrive)	1 1	a, e, g a, e, g	5, 4 5, 4, 6	b, d b, d, c
4LG - 4LM Missinaibi River	S-2	19 (gasoline)	k	1	d

Comments: - Improvements in suspended solids and BOD loadings in the Kapuskasing River has been noted as the Spruce Falls Power and Paper mill is complying with a new Control Order. However, it is anticipated that the dissolved oxygen objective will still be exceeded during low flows.

- The river is seriously affected by logdriving practices and further work is required with Spruce Falls Power and Paper and MNR to define and resolve these problems. Aesthetics are affected by bark and fibre deposits. A Control Order is in place. Conditions are improving.

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4MA Upper Abitibi River	In-1	5	i	3	b
Comments: -	Discharges from abandoned Quebec gold mines have resulted in fish tainting. Limited consumption is recommended. As the mines are not under Ontario's jurisdiction, work is required by Quebec and/or the Federal Government.				
4MB Black River	No data available				
4MC Middle Abitibi River	In-1 L-2	1, 2 3, 5, 13	g, e k	5, 4 1	a d
Comments: -	A Control Order is in place and has been completed satisfactorily. Problems caused by BOD and suspended particulate loadings have been resolved. Dissolved oxygen objectives in the river were met the summer of 1984. Abitibi-Price is monitoring during warm water period.				

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
4MD					
Fredrick House	Mi-1	5	-	-	b
River	Ur-1	4	b	3	-
	S-2	19 (gasoline)	c (vapours in sewers)	9	b

Comments: - Discharge to Porcupine River from lead/zinc and gold mining have resulted in exceedances of Provincial Water Quality Objectives.

4ME Lower Abitibi River 4MF French River 4NB Upper River Turgeon 4NC 7 James Bay Tributaries	No data available

SOUTHWESTERN REGION

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GC	Ag-1-2	2,4,6,10,17,18	b,c,e,f,g,h,k	5,4,1,2,3,6,7	b, c
15 Lake Erie	STP-1	4, 11, 1	e, h, c	3, 4, 5	b, d
Tributaries	In-1	1, 5	a, e, h	5	b, d
(eastern Lake Erie)	L-2, L-1	9, 5	k, e, h	-	b
	S-2	-	k	-	-

Comments: - Agricultural activities have resulted in heavy erosion and sedimentation throughout the area. Soil conservation is required. Livestock operations cause manure spills and trampled stream banks. Some high quality trout streams are affected by heavy irrigation withdrawals by tobacco farmers. OMAF soil conservation team is now active in this area.

- Improved sewage treatment is under way at St. Thomas and Aylmer.
- A new wastewater treatment system has been installed at the Ford plant in Talbotville.
- The main groundwater quality problem in this area is the contamination of shallow aquifers by agricultural fertilizers and potentially by pesticides.
- Minor localized groundwater problems have resulted from storage facility leaks.
- A study to evaluate the impact on water quality as a result of land use changes has been completed.
- Thirty million dollars have been committed to reduce phosphorus loadings to Lake Erie by 200 tonnes a year over 5 years through the federal-provincial Soil and Water Environmental Enhancement Program (SWEEP).
- A potential water quality problem exists at Port Stanley from buried coal tar wastes and other wastes.

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GF					
9 Lake Erie Tributaries (central Lake Erie)	Ag-1-2	2,4,18,6,17	e,g,k,b,c,f	4,5,6,1,2,3,7	b, c
	S-2	-	k	1	-
	Pr-2	6, 18	k	1, 2	-

Comments: - Severe erosion, particularly in the western part of the watershed has resulted in turbidity in Rondeau Harbour and has drastically affected fishery and general ecology. A local farming committee has been established to work with government agencies on implementing erosion-control measures. Numerous voluntary control measures (e.g. fall cover crops) are being put into place. Improvements in Rondeau Bay will depend largely on the efforts of OMAF and local farmers to reduce watershed erosion.

- Thirty million dollars have been committed to reduce phosphorus loadings to Lake Erie by 200 tonnes a year over 5 years through the federal-provincial Soil and Water Environmental Enhancement Program (SWEEP).
- The main groundwater quality problem in this area is the contamination of shallow aquifers by agricultural fertilizers and locally by pesticides.
- Minor localized groundwater problems have resulted from storage facility leaks and private sewage systems.

2GH						
1.	Essex County, Lake Erie Tributaries	Ag-1-2	2, 4, 18	e, g, k	5, 4, 1, 2, 3	b, c
		Pr-1-2	6, 1, 4, 18	c, a, e, k	3, 4, 5, 1, 2	b, c
		Ur-1	5, 6, 2	c, h, e	3, 4, 5	b
		L-2	-	K	-	-
		In-1	9	g, h	9	b, d

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GH					
1. Essex County, Lake Erie Tributaries (continued)					
Comments: - Row crop agriculture and agricultural drainage have caused heavy erosion and sedimentation in the area. Efforts are required to preserve soils and streams.					
- Many septic systems are on tight soils which have resulted in overflows affecting perhaps one half of the watershed. Solutions are costly and technically difficult.					
- Urban drainage in Windsor has damaged Little River and Turkey Creek. A localized PCB (and possible PAH) problem in Turkey Creek has been found.					
- The main groundwater quality problem in the area is the contamination of shallow aquifers by agricultural fertilizers and locally by pesticides.					
- Minor, localized groundwater problems have resulted from landfill sites and private sewage systems.					
- Thirty million dollars have been committed to reduce phosphorus loadings to Lake Erie by 200 tonnes a year over 5 years through the federal-provincial Soil and Water Environmental Enhancement Program (SWEEP).					
2. Lake Erie	Ag-1	1,2,4,6,19 (PCBs)			
Wheatley Harbour	In-1	1,2,4,6,19 (PCBs)	a, c, e, g, i	1, 3, 5	c
Comments: - Omstead Foods Ltd. has reduced BOD and suspended solid loadings through the installation of an additional clarifier and two additional mechanical aerators. Phosphorus removal facilities were installed in 1983.					
- A draft Remedial Action Plan for the Wheatley Harbour Area of Concern is being prepared by the federal-provincial work team and is scheduled for completion by November 1988.					

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GH (continued)					
3. Detroit River	Ur-1	6, 9, 5	c, g	3, 5	b, d
	STP-1	2, 6, 9, 5	c, g	3, 5	b, d
	Trans-1	2, 4, 6, 5, 9	c, g	3, 5	b, d

Comments:
- A $20 million program to provide a sewage collection system, including a pumping station and forcemain, in Sandwich West Township has been completed.
- The City of Windsor has expanded its westerly wastewater plant to 164,000 m^3/d (36 MIGD). The expanded facility will treat additional wastewater from Sandwich West Township.
- At Amherstburg, the existing primary sewage treatment plant has been expanded.
- Plans are under way to expand Windsor's Little River STP, and a Pollution Control Strategy for Windsor is under consideration.
- Transboundary pollution in the lower river is attributable to inputs from the Rouge River (Detroit) and from the Detroit, Michigan STP.
- The Detroit River is being studied as part of the international Upper Great Lakes Connecting Channel Study, reporting in 1987.
- As part of the Agreement between Michigan and Ontario, a statement outlining requirements for remedial action will be submitted to the Governor of Michigan, the Premier of Ontario and to IJC by March 1989. The final Remedial Action Plan will be prepared after the Upper Great Lakes Connecting Channels Study has been completed.

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GD	Ag-1-2	1,2,4,10,18,6	b,f,g,k,c,e	1, 2, 5, 7, 3	b, c
Upper Thames River	STP-1	4, 6, 11, 10	b, c, a	5, 3, 4	b, d
	Ur-1	2, 4, 6	b, c, c	5, 3	b, d
	L-2	-	k	-	-
	Pr-2	6, 18	k	1, 2	-
	R-2	15			

Comments:
- Problems resulting from agricultural activities include erosion, sedimentation, manure spills and livestock trampling of stream banks. Soil conservation is promoted through the Diffuse Source Control Program.
- Sewage treatment plants provide adequate treatment but limited stream dilution is a problem. Remedial measures are being investigated.
- The Stratford-Avon River Environmental Management Project addressed remedial measures for the Avon River, and some of these are being implemented.
- Localized groundwater problems relate to agricultural contaminants, landfill leachate, domestic sewage and road de-icing. Shallow wells in the Village of Komka have elevated nitrate levels resulting from numerous individual septic systems. A detailed groundwater quality study is underway in 1987.
- An MOE funded study to model the fate of the herbicide atrazine on an agricultural watershed is underway.

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GE					
Lower Thames River	Ag-1-2	2, 4, 18, 6	e, g, k, c	4, 5, 1, 2, 3	b, c
	Pr-2	6, 18	k	1, 2	-
	S-2	-	k	-	-

Comments: - Erosion and sedimentation are common problems throughout the area. Promotion of erosion control is undertaken through OMAF's new soil conservation team.
- The main groundwater quality problem in the area is the contamination of shallow aquifers by agricultural fertilizers and locally by pesticides.
- Minor, localized groundwater problems have resulted from storage facility leaks and private sewage systems.

2GG						
1.	St. Clair River	Ag-1-2	2, 1, 10, 18	g, f, e, k, c	5, 4, 2, 1, 3	b, c
-	Lake St. Clair	In-1	1, 3, 9	e, g, i, h, k	5, 4, 1	b, c
	Tributaries	Pr-2	6, 18	k	1, 2	-
		S-2	-	k	-	-
		Ur	6	c	1, 3	-

Comments: - Agricultural activity has resulted in heavy erosion and sedimentation throughout the area. Conservation measures are required.
- The petroleum extractive industry discharges brine water to streams in the Petrolia area in exceedence of the livestock watering objective.
- The main groundwater quality problem in the area is the contamination of shallow aquifers by agricultural fertilizers and potentially by pesticides. A study of contamination of the fresh water aquifer from past operation of industrial waste disposal wells in the Sarnia area is underway.
- Minor, localized groundwater problems have resulted from storage facility leaks and private sewage systems.

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GG (continued)					
2. St. Clair River	In-1-2	9, 13, 5	g, h, i, e, k	5	a, b, d
	Ur-1	6, 2	c	3, 2	b, d

Comments: - Industries such as Esso Chemical, Imperial Oil, Polysar, Dow Chemical and Suncor at Sarnia and Shell, Petrosar, Dupont and Ethyl Corporation at Corunna contribute to organic contaminants and residual mercury in the river. The bio-oxidation treatment plant at Polysar was completed in 1983 and is expected to reduce the organic pollution level of the river. The Township Ditch was extended to a distance of 70 m from the shoreline and will facilitate greater mixing for Polysar and all other industries located along the Ditch. The impact of contaminant build-up on downstream industrial intakes will be reduced.

- Dow Chemical has extended the Second Street sewer to promote efficient mixing.
- Sewer system overflows in the Sarnia area have led to beach closures in Sarnia Bay.
- A variety of studies are taking place in conjunction with the international Upper Great Lakes Connecting Channels Study and through MISA.

2FF					
18 Lake Huron Tributaries (south Lake Huron)	Ag-1-2	4,2,10,18,6	b, f, g, k, c	5,4,7,1,2,3	b, c

Comments: - Row crops and livestock operations have caused erosion, sedimentation and manure impairment to streams. The Ausable-Bayfield Conservation Authority is aggressively demonstrating projects on erosion control and stream bank stabilization. MOE has funded a project which identified major livestock operations which have adverse effects on water quality. The project methods will likely be applied in other areas to assist MOE with its farm management program. Farms with high potential to pollute are being inspected and suggestions are made for remedial measures.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FF (continued)					
Comments: - Groundwater quality problems relate primarily to agricultural fertilizers, animal wastes and pesticides. Wells in the Village of Hensall have been contaminated with nitrate from nearby farms. Investigations have not identified a single point source. Modifications to agricultural practices will be promoted to minimize the problem.					
2FE Maitland River and 2 Other Tributaries	Ag-1-2	4, 2, 10, 18	b, e, g, k, c	7,5,6,1,2,3	b, c
	STP-1	4, 6	b, c, e	5, 7, 1	b, d
	Mi-1	15	g	-	-
	Pr-2	6, 18	k	1, 2	d
	S-2	-	k	-	-
	L-2	-	k	-	-
Comments: - Agricultural activity has degraded general water quality in recent years. The Maitland Conservation Authority is attempting to challenge drainage proposals and to rehabilitate some streams. - Presently, the STPs at Listowel and Milverton adversely affect several kilometers of stream during discharge. Expansion at Listowel STP is being considered. - The main groundwater quality problem in this area is the contamination of shallow wells by private sewage systems. - Minor, localized groundwater quality problems have resulted from agricultural fertilizers and animal wastes, landfill leachate and storage facility leaks. - Saline water is discharged from the salt mine settling basin at Goderich.					

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FD 23 Lake Huron Tributaries (northern Lake Huron)	Ag-1-2	4, 2, 18, 19 (temperature)	e, g, k, l (thermal)	5, 6, 1, 2	b, c
	In-1	4, 19 (temperature)	b, e, l (thermal)	5, 6, 9 (fish entrainment)	b, c, d
	Pr-2	6, 18	k	1, 2	-
	L-2	-	k	-	-

Comments: - Row cropping, drainage and intensive livestock operations have adverse effects on water quality in the area. Streams are used for recreational activities and are ecologically sensitive.

- Industries (cheese factories and fish hatcheries) adversely affect water quality on a localized basis. Bruce Nuclear Generating Station and future associated industry may further degrade water quality.

- Minor, localized groundwater quality problems have resulted from private sewage systems, agricultural fertilizers, animal wastes, and landfill sites.

2FC Saugeen River	Ag-1-2	4, 2, 19 (temperature)	b, e, k, l (thermal)	6, 5, 1, 2	b, c
	STP-1	4	b, e	5	b, c
	In-1	4, 10, 19 (temperature)	b, g, l (thermal)	5, 6	b, c, d
	L-2	-	k	-	-
	R-2	-	k	-	-
	S-2	-	k	-	-
	Pr-2	6, 18	k	1, 2	-

Comments: - Agricultural row cropping, drainage and intensive livestock operations are increasing in this area. Streams are recreationally important and ecologically sensitive.

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FC (continued)					
Comments: - Industrial impacts are very localized. Fish hatcheries now require Certificates of Approval. - Sewage treatment effluent only incurs localized impacts. - Localized groundwater quality problems have resulted from agricultural fertilizers, private sewage systems, landfill leachate, road de-icing, and storage facility leaks.					
2FA Bruce Peninsula Streams	Pr-1-2	4, 6, 18	b, e, k	4, 5, 1, 2	b, c, d
	Ag-1-2	2, 4, 18, 19 (temperature)	g, e, c, k, l (thermal)	6, 5, 1, 2	b, c
	In-1	4, 2	b	5	d
	L-2	-	k	-	-
	R-2	-	k	-	-
	S-2	-	k	-	-
Comments: - Agricultural drainage projects are threatening some streams in the area. Fences are required to keep livestock away from stream banks. - Industrial impacts from fish hatcheries are very minor. Fish hatcheries now require Certificates of Approval. - Septic tank leakage and seepage from cottage sources are affecting localized areas of surface and groundwater. - Minor, localized groundwater quality problems have resulted from agricultural fertilizers, road de-icing, storage tank leaks, and landfill leachate. - The bedrock aquifer in parts of this watershed contains naturally elevated levels of barium and fluoride.					

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2FB 14 Georgian Bay Tributaries (western Georgian Bay)	Ag-1-2	4, 2, 18, 19 (temperature)	b, g, k, l (thermal)	6, 5, 1, 2	b, c
	In-1	4, 5, 19 (temperature)	b, g, l (thermal)	5, 6	b, c, d
	Pr-1-2	4, 6, 18	b, e, k	5, 6, 1, 2	b, c
	L-2	-	k	-	-
	S-2	-	k	-	-
	R-2	-	k	-	-

Comments: - Agricultural activity is increasing in this area. Streams are recreationally important and ecologically sensitive.
- Fish hatcheries (main industry) require Certificates of Approval.
- Localized groundwater quality problems have resulted from agricultural fertilizers, private sewage systems, landfill sites, road de-icing, and storage facility leaks.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HB					
Lake Ontario:	STP-1	10, 1, 4	a, b	5	b, d
Hamilton Harbour	In-1	5, 10, 13	a, i	5	b, d
	Ur-1	2, 1	e, g	5	b, c
	Ag-1	2, 4	b, e	5	b, c

Comments:
- The Harbour is a source of contaminants and nutrients to Lake Ontario. The Harbour plume occasionally affects the Hamilton and Burlington WTP intakes.
- The Federal harbour status restricts use. Waters are being used for commercial navigation, industrial cooling, waste reception and recreational boating. Water quality has improved since the 1960s through continued industrial and municipal abatement. Dissolved oxygen problems are aggravated by contaminated sediments.
- A technical advisory committee has recommended partial dredging of contaminated sediments in the Windermere Basin with on-site disposal.
- The Water Resources Branch completed a technical summary and management options report in August 1985 and a Trace Organics Report in June 1986.
- A major public involvement program in 1986 identified concensus positions on Harbour water use. Water quality is to be upgraded with the aim of protecting all existing uses. Remedial options (RAP) are being developed. MISA regulations for the steel industry will be developed during 1987-88.
- A study is being carried out to determine baseline creek impacts and methods of reducing solid and nutrient loadings.

WEST CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HA					
1. Western Lake Ontario Tributaries and waterfront (from Niagara River to Burlington)	Ag-1	4, 6, 2	g, e, c	3, 5	b, c
	Ur-1	6	c	3	a
	R-2	15	k	1, 2	d
	L-1,2	10	h, k	5, 2	b, d
	Ur-2	17	k	1	-
Comments: -	Abatement policies are required to reduce agricultural loadings of bacteria and turbidity.				
-	Stormwater discharges impact on some Lake Ontario beaches following rainfall.				
-	Shallow over burden on fractured bedrock makes groundwater susceptible to road salt contamination.				
-	Cyanimid Niagara Falls landfill leachate impacts on groundwater and Five Mile Creek.				
-	CWML site at Smithville contaminated groundwater with PCBs, jeopardizing local water supplies and forced MOE to commit to new water supply for the town.				
-	A rural beaches program has been initiated on the Welland River to determine bacterial sources causing contamination of the Binbrook reservoir beach.				
2. Lower Welland River	In-1	10, 2, 5	h, e, g	5	b, d
	STP-1	10, 4, 2	h	5	a, d
	Ur-1	2, 6, 4	c, e	3, 5	b, c
Comments: -	Industries are under Control Orders or abatement programs.				
-	Welland STP is being upgraded to include partial nitrification.				
-	Water quality is being investigated more thoroughly as part of the Niagara River Study.				

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HA (continued)					
3. 12 Mile Creek	STP-1	1, 4, 6	c	3	c, d
	L-1	9	i	5	c, d
	In-1	1, 2, 6	c, e, g, i	3, 5	a, d
	Ur-1	6, 1	c	3	b, c
Comments: -	Paper mill and combined sewer discharges have resulted in elevated bacterial levels along the Lake Ontario shoreline and also in 12 Mile Creek. The St. Catharines Pollution Control Plan Study is under way. It includes a toxics survey to determine why spottail shiners have elevated levels of dibenzofurans, and a source assessment of bacterial contamination to Lake Ontario beaches. Four Lake Ontario beaches are permanently posted.				
-	Ontario Hydro diverts 184 m^3/s (6,500 cfs) from Welland Ship Canal to 12 Mile Creek.				
4. Niagara River	STP-1	9, 4, 6	i, c	5, 2, 3	b, d
	In-1	9, 5	i	3, 5, 2	a, c
	Trans-1	9, 5	i	5, 2	c
	L-1-2	9, 5, 10, 12	i	5, 2	c, d
	Ur-1	1, 4, 6	c, e	3	b, c
Comments: -	Direct and indirect industrial and municipal discharges, contribute to trace contaminant (organic and inorganic) loadings in river, with the majority (both in number and flow) on the U.S. side. Exceedences of aquatic life criteria for some heavy metals and chlorinated organics as well as for phosphorus and bacteria are mainly confined to the U.S. side of the upper Niagara River. These sources may potentially impact on water supplies. Annual surveys of all Ontario point sources began in 1981 and 1982 to evaluate loadings. SPDES permit reviews for major U.S. point sources will include trace contaminants. A $1 million pilot scale granular activated carbon treatment system has been approved for testing at the Niagara Falls, Ontario WTP.				

WEST CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HA					
4. Niagara River (continued)					
Comments: - At least four of the 215 disposal sites on the U.S. side of the river are known to have leaked contaminants into the river (Love Canal, Hyde Park, 102nd Street and Hooker "S" area) and may potentially impact on water supplies. In addition to organics and metals, some of these sites contain radioactive materials. Further abatement work is required on these as well as other high priority sites.					
- The Niagara River Toxics Committee Report, released in November 1984, resulted in the development of a Toxics Management Plan. A draft Remedial Action Plan for Ontario sources was submitted to the IJC in 1985. The final Remedial Action Plan for Ontario sources should be completed by October 1990. The Niagara River Toxics Management Plan, was released in October 1986 and identified actions for toxics management including long-term monitoring, point and non-point source control programs and procedures for exchange and release of information. A commitment was signed by four agencies to reduce toxics loadings by 50% by 1996.					
- A joint pollution control plan/infrastructure study is underway in Fort Erie with the ultimate aim of reducing bypassing to local waterways during rainfall. A PCP study for the entire Niagara region is underway.					
2GA					
Upper Grand River	Ag-1	4, 2, 6	b, e, c	5, 2, 3	c
	STP-1	4, 10, 1	a, b	5, 2	a, d
	In-1-2	9, 17, 4, 2	h, k, g, e, b	2, 5	b, c, d
	L-2	15, 9	k	1	b, d
	Pr-2	15, 6	c, k	2	b, d

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS

2GA (continued)

Comments:

- Agricultural land drainage in the upper basin contributes nutrients and bacteria to water courses. Present controls are inadequate. Beaches are in jeopardy of being posted.
- Heavy STP loadings (Guelph, Waterloo, Kitchener) contribute to plant and algae growth. STP discharges may also result in un-ionized ammonia criteria not being met. The Grand River Implementation Committee study addressed these problems. The Region of Waterloo is carrying out a Master Wastewater Study.
- Discharges from the Uniroyal chemical plant in Elmira and past waste disposal practices have caused groundwater contamination. Discharges to surface and groundwater could potentially contaminate existing and limit future water supplies in Elmira, Kitchener-Waterloo and Brantford. Assessment and abatement of the impacts of Uniroyal activities on surface and groundwater quality is continuing. A MISA pilot project was initiated to investigate the impact of hazardous contaminants from Waterloo STP, urban runoff and industrial/landfill leachate. Impacts were not detected at Waterloo and the project has moved to Elmira.
- Petroleum wastes which previously infiltrated soils at the Breslube site have the potential for contaminating surface and groundwater.
- A fish farming operation has resulted in water quality degradation in a downstream pond. Treatment requirements have been developed, and implemented.
- The Region of Waterloo Waste Management Study is evaluating locations for new landfill sites. Some existing sites are potentially contaminating local aquifers.
- Waterloo Region has proposed to extract water from Grand River and recharge an aquifer as municipal supply (submitted as Class EA).
- A private proposal has been made to serve the Kitchener-Waterloo area from Lake Erie by pipelines. The province has been asked to evaluate the feasibility of the proposal.

WEST CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2GB					
Lower Grand River	Ag-1	2, 4	e, b	2, 4, 5	a, c
	R-2	15	k	2	b, d

Comments:
- Upstream agricultural inputs have increased turbidity levels in the Lower Grand River.
- The stream is slow moving and has limited plant growth because of turbidity. No major problems are noted.
- Future trout farming operations have potential to cause water quality problems.
- Large rural subdivisions have potential to contaminate aquifers.
- Coal gasification wastes may endanger municipal wells in Kitchener.

CENTRAL REGION

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HH					
Kawartha Lakes	Ag-1	4, 9	b, i, e	5	-
Drainage	STP-1	4, 9	b, i, e	5	-
	Pr-2	4, 6	c, k	1	d
	R-2	15	k, e	1, 2	b, d
	L-1-2	15, 9, 3, 19	d, b	1, 2	-

Comments:
- MOE is proposing water quality management studies for 11 different areas within the Kawartha Lakes.
- Private sewage systems and road salting caused extensive contamination of shallow wells in Bridgenorth (Township of Smith). Individual well replacement under a Ministry grant program has commenced and is expected to be completed by the end of 1987.
- The old and new Peterborough landfill sites have caused local degradation of water resources. A study is under way on the new site to develop corrective measures. There is a need for further monitoring at the old Peterborough landfill site.
- MOE is continuing comprehensive biological and nutrient budget studies of Sturgeon and Rice Lakes to provide a sound technical basis for water quality management decisions.
- Village of Oakwood road salting appears to have contaminated wells. Further study is needed and communal systems or treatment may be required under Policy 15-04-01. A report is in progress.
- MOE is doing a detailed nutrient budget study on Sturgeon Lake. The expected completion date is 1989. This study will result in a management strategy for nutrient loading to this lake.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HJ					
Otonabee River-	STP-1	4, 9	b, c, i, e	3, 5	a
Rice Lake	Ur-1	4, 9	b, c, i, e	3, 5	b

Comments: - Peterborough industries are contributing to PCB contamination of the Otonabee River and Rice Lake. Studies to identify specific sources and viable abatement action are under way.

- Peterborough Area Beach Pollution Studies are under way along Otonabee River within the City of Peterborough and along Indian River beaches. The studies will make recommendations on abatement options to improve quality of the rivers for swimming use. The study is scheduled to be completed by 1989.
- MOE is doing a detailed nutrient budget study on Rice Lake. The expected completion date is 1989. This study will result in a management strategy for nutrient loading for this lake

2HG					
Scugog River	STP-1	4, 1, 6, 10	b, a, e	5, 3	b
	Ag-1	2, 4	j	2	b, c
	Pr-2	4, 6	c, k	1	d
	R-2	15	k	1, 2	d

Comments: - A poorly developed agricultural drainage channel has caused high turbidity downstream at the Lindsay water filtration plant. Reparation and stablization work of the drains are under way.

- Road salting caused extensive contamination of shallow wells in Manchester (Township of Scugog). All replacement wells have been installed under a Ministry grant program. Iron treatment is being considered for the new replacement wells.
- Private sewage systems and road salting have caused extensive contamination of shallow wells in Greenbank (Township of Scugog). A study has been completed to implement a water well replacement program. The Town has submitted a request to the Region to proceed on a communal water basis.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HF					
Cameron Lake Drainage	STP-1	4	b	2	b
	Pr-1	4	b	-	a
	R-2	15, 18, 6	k	1, 2	b, d
	L-2	15, 9, 3, 19	d, b, k	1, 2	-

Comments:
- The northern portion of this watershed is largely undeveloped.
- Operational problems at the STPs in Haliburton and at Leslie M. Frost Centre should be rectified although adverse effects of the effluent discharges are not significant.
- Private sewage systems and road salting have caused extensive contamination of shallow wells in Coboconk (Township of Bexley and Somerville). A study has been completed to implement a water well supply project.
- Detailed studies have been completed to assess potential groundwater contamination near the Ennismore Township landfill site. Studies concluded insignificant offsite impact.
- Monitoring is ongoing.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HD					
1. Lake Ontario Tributaries and waterfront (from Pickering to Colborne)	STP-1	4, 6, 10, 11	b, c, h	5, 3, 1	b, d
	O-1 (stream rechanneli-zation)				
	Ur-1	2, 9, 4	i, e	5	a
	Pr-2	4, 6	c, k	1	d
	R-2	15	k	1, 2	d
	L-2	15	k	1, 2	b, d

Comments:
- Two of four STPs discharging into creeks in the area cause adverse water quality conditions. A new facility is in service for Village of Colborne. Both Cobourg STPs have been upgraded and problems have been rectified.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
1. Lake Ontario (continued)					
Comments: - An Environmental Assessment was undertaken for rechannelization of the Ganaraska River for flood control purposes to handle storm water discharges to the river. Environmental concerns relate to channel configuration, the need for the project, and problems during construction. Construction in accordance with the mitigative measures identified in the EA is under way. - Private sewage systems and road salting have caused extensive contamination of shallow private wells in Newtonville. A study has been completed to implement a well water supply replacement project. The Town of Newtonville has asked the region to proceed on communal water basis. Test drilling has been carried out near Orono to determine availability and quality of groundwater to replace existing municipal wells affected by road salting. Two new wells have been constructed. - The Cobourg landfill site has caused degradation of local water resources. A study has been completed and abatement measures required have been identified. The existing site is proposed to expand. - The City of Oshawa with assistance from MOE, conducted a dry weather survey of their storm sewer outfalls and Region of Durham's outfalls within city limits during summer of 1986. As a result of their findings, additional sampling is being conducted on a number of storm sewer outfalls and abatement work is being conducted on several other storm sewer systems.					
2. Lake Ontario: Port Hope	In-1	8, 5, 9 (PCBs)	i j 1 (sediment)	5, 2 or 1 (not proven)	a

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HD					
2. Port Hope (continued)					

Comments: -
- Drinking water quality at the Port Hope WTP is not presently impaired by industrial discharges although occasional raffinate spills by Eldorado Nuclear have led to elevated levels of radionuclides (Ra 226) which are confined to the Port Hope harbour turning basin. No further spills are expected as the plant has relocated. Sediments of the turning basin are contaminated with radionuclides, metals and PCBs, thus precluding unrestricted dredged spoils disposal.
- Source(s) of PCBs are under investigation and abatement is probably required.
- Expansion of uranium hexafluoride production capacity by Eldorado Nuclear is completed. Potential impacts (largely thermal) on local fishery were investigated. Follow-up monitoring will test prediction of no significant thermal impacts, once the plant is operational.
- Atomic Energy Canada Limited has announced that all low level radioactive waste in the Port Hope area will be moved onto safe storage sites. Studies will be undertaken to examine options for removal of the contaminated sediments.

2HC						
1.	Lake Ontario Tributaries and waterfront (from Etobicoke to Pickering)	Ur-1	2, 6, 4	g, c, b	5, 3, 1	b, c
		STP-1	4, 10, 11	b, c, h	5, 3, 1	b, c
		Pr-2	4, 6	c, k	1	d
		R-2	15	k	1, 2	d
		L-2	15, 14, 13, 9, 3, 19	k	1, 2	b, d

Comments: - A large portion of this area is urbanized and streams such as the Humber and Don Rivers receive flows from storm and combined sewers. It is suspected that these flows are responsible for the deteriorated water quality in the basin including the lakefront areas.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS

2HC
1. Lake Ontario (continued)

- Private sewage systems and road salting have caused extensive contamination of shallow private wells in Claremont. A study has been completed to implement a well water supply replacement project in this community.
- The Humber River, Don River and Mimico Creek basins are included in the Toronto Area Water Management Study which is intended to assess existing water quality problems and recommend and implement corrective measures. This 5-year MOE study will result in a comprehensive water management plan for the area. The Humber River plan has been completed.
- The old Town of Vaughan landfill site has caused an extensive contaminated plume. The Metro Toronto Keele Valley landfill site abatement program is designed to ensure that water resources are adequately protected.
- A large portion of this area is urbanized and its streams such as the Humber and Don rivers receive urban runoff from storm sewers and from combined sewers under storm events. Their contaminant loadings contribute to the deteriorated water quality of these streams and Lake Ontario near shore areas.
- The agricultural areas in these basins contribute to water quality reduction of the streams from soil erosion, livestock operations and other agricultural practices.
- The impact of glycol ethylene use in the de-icing of aircraft at the Pearson International Airport on Mimico and Etobicoke creeks were monitored during the 1986-87 winter season. Preliminary indications suggest minimal impact on the receiving streams. Additional sampling is proposed.
- Under the Toronto Area Water Management Study, the Humber River Management Plan was completed in 1986 and one for the Don River is slated for 1988.
- Ongoing municipal sewer separation programs are reducing bacterial and other sanitary waste loadings to the waterfront.
- Acceptance and implementation of the TAWMS Humber River Water Management Plan for the Humber river basin, by the Ministry and the Metro Toronto Municipalities would reduce the contaminant loadings to the waterfront from the basin over time.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS

2HC

1. Lake Ontario (continued)

Comments: - Under the proposed 1987-88 MOE - Metro Toronto Waterfront Water Quality Improvement Program the following are being considered:

- studies to carry out treatment optimization at the Humber and Main STPs
- correction programs to locate and remove cross connections of sanitary flow to storm sewers
- reduce storm water inputs into combined sewer systems through inlet controls and roof-spout disconnections
- expansion of water quality monitoring at the Western Beaches
- model, work on sediment contamination for the Western and Island beaches
- beach improvements on Ashbridges Bay
- design of abatement facilities at Eastern Beaches
- elimination of point source pollution at the Western Beaches.

2.	Lake Ontario Toronto Waterfront	Ur-1	9, 6, 4, 2, 5, 17	i, c, b, e, h	5, 3, 9	d, c
		STP-1	6, 5, 9, 17	c, e, h	3, 9	d
		O-1 (lakefilling)	2, 4, 5, 9, 17	e, h	9	d
		D-1	2	e, h	9	a
		L-2	15,14,13,9,3,19	k	1, 2	d, b
		At-1	5, 9, 17	h		

Comments: - Lakefilling at the Leslie St. Spit is an issue of high public interest and attention. Short and long term effects are under study by MOE. Results to date indicate that effects are localized and do not impact on water supplies. A proposal by the Toronto Harbour Commission to provide a 1,200 berth marina in the Outer Harbour has been reviewed under the Federal Environmental Assessment Review Process and has been approved. Construction is underway.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HC 2. Lake Ontario (continued)					
Comments: - Dredging and dredged spoils disposal effects have been studied by MOE/DOE. Results indicate that water quality impacts are localized. MTRCA has completed an Environmental Assessment on effects of siltation at the mouth of the Don River. The EA recommended the dredging of the Keating Channel and the EA has been approved. Dredging will be done in 1987. - A draft Remedial Action Plan for the Toronto Waterfront Area of Concern is being prepared by the federal-provincial work team in cooperation with the City of Toronto and is scheduled for completion by July 1988.					
2HB Lake Ontario Tributaries (from Burlington-Etobicoke)	STP-1	4, 10, 11	b, c, h	5, 3	b
	Pr-2	6, 18	c, k	1	b
	Ag-2	18	k	1	b
	In-1	1, 2, 4, 13	-	-	b
	L-2	15, 9, 3, 19	k	1, 2	-
Comments: - Several water quality surveys indicate that water quality is being degraded by STP effluents to the extent that provincial water quality guidelines at times are exceeded. Potential for further degradation exists. Grants for expansion of plants are being sought by the concerned municipalities. - Storm water runoff and agricultural inputs could potentially damage the basin water quality, but do not appear to be doing so at present. - Private sewage systems have caused extensive contamination of shallow wells in Alton. A study has been initiated to implement a well water supply replacement project.					

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HB (continued)					
Comments: - A turkey farm operation in Mono Mills has caused a nitrate pollution problem in the local municipal ground water supply. The Region of Peel has had to develop additional water supply to meet the water requirements of the community.					
- BOD contamination from Ford-Oakville is localized and rapidly diluted by the lake water.					
- A leachate collection system was installed at the closed Bayview landfill site in 1987 and leachate is being discharged to Burlington STP.					
2ED					
1. Nottawasaga River and 13 Other Tributaries	STP-1 L-2 O-2	6, 10, 11 15, 9, 3, 19 5, 19	b, c, h k K	1, 3 1, 2 1	b, c d, b
Comments: - Water quality surveys indicate that streams are being degraded by sewage treatment facility discharges. Corrective action has been recommended.					
- Agricultural and recreational activities have the potential to adversely affect water quality.					
- Landfill sites at Vespra, Wasaga Beach, Tecumseh and Stayner have caused off-site leachate impact on local water resources. Studies are in progress and ongoing monitoring will indicate if abatement is required.					
- Stormwater from the Honda Auto Plant in Alliston has increased sewage discharge loadings to the Boyne River. The fieldwork for an assimilation study for an expanded STP has been completed and a Certificate of Approval has been issued.					
- A proposal for discharges of effluents from an STP for Nottawasaga Inn to the Nottawasaga River has been reviewed by the Ministry and a C. of A. has been issued.					
- Beeton has quality problems with their existing water supply. The well being used to supplement spring water has poor quality with gas, iron and manganese. Improvements in wells are required.					

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2. Collingwood Harbour	Ur-2	5, 19 (PCBs)	g. h	4, 5	b
	In-1	5, 19 (PCBs)	g, h	4, 5	b
	STP-1	4	b	4, 5	b, d
Comments: -	As part of the Collingwood Harbour Study, enhanced monitoring of a tributary to the harbour was underway in 1986. Results from the field work were included in the Draft Remedial Action Plan for the Collingwood Area of Concern which was completed by March 1987. This draft is now being reviewed and a final draft should be completed by Fall 1987. A new draft will be prepared by March 1988 incorporating a larger environmental database.				
3. Penetang Bay - Sturgeon Bay	STP-1	4, 6	b, c	5	b, d
Comments: -	A decrease in phosphorus loading to the area from Penetang Bay to Sturgeon Bay has occurred since 1974. However, monitoring shows limited response to water quality from reduced phosphorus loadings and eutrophication potential still remains. Studies are in progress to better understand the limited response to nutrient control. The expansion of the Midland STP has been completed. The new sewage treatment facility at Victoria Harbour is now operational. Construction of a new STP for Penetanguishene has been completed and the plant is operational.				

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2EC					
Lake Simcoe Basin-	Ag-1	4	a, b	5	c
Severn River	Ur-1	4	a, b	5	c
	STP-1	4	a, b, e, g	3,5	c
	Pr-2	4, 6	c, b	1	d
	R-2	15	k, e	1, 2	b, d
	L-2	15, 9, 3, 19	k	1, 2	b, d

Comments: - Under the Lake Simcoe Environmental Management Strategy a number of programs are being carried out. A comprehensive monitoring and study program to determine phosphorus loadings to Lake Simcoe has been completed. Potential non-point source abatement measures have identified.

- The monitoring program being conducted on Lake Simcoe by the South Lake Simcoe Conservation Authority and MOE, has established background nutrient levels against which future abatement measures will be measured. These measures were recommended by CCRD and adopted by MOE for reducing phosphorus loadings from STPs and agricultural drainage from the Holland Marsh into the Holland River.
- As the result of a 1979 CCRD directive, the sewage discharges from Aurora and Newmarket were re-directed to the York-Durham Sewage Treatment System in June 1984, for treatment at the Duffin Creek STP. This will reduce phosphorus loadings to the East Holland River and to Cook Bay in Lake Simcoe.
- Private sewage systems and road salting have caused extensive contamination of shallow wells in communities along the western shore of Lake Simcoe in the Township of Innisfil and in Ballantrae in the Town of Whitchurch-Stouffville. Studies have been initiated to implement well water supply replacement projects in these communities.
- WMI Canada, Landfill Site #1 (Town of Aurora) has caused an extensive contaminant plume off-site. The extension of municipal water supply is in progress to supply water to the affected well owners.
- The City of Orillia landfill site has degraded local water resources. A study has been done to assess problems and potential remedial actions. This site has been approved for expansion.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2EC Lake Simcoe (continued)					
2EB Moon River and Gohome River	STP-1	4	b	-	a
	Pr-1	4	b	-	a
	In-1	1, 2, 4	b	-	a
	L-2-1	9, 5	k, e	1	b, d

Comments: - Road salting has caused extensive contamination of a shallow aquifer in Tecumseh Township, west of Schomberg. Well replacement under Policy 15-04-01 is required. A report is in progress.

- Research is underway to develop a predictive oxygen model for Lake Simcoe.
- An additional survey has been done and reported on dichotomosiphon tuberosus in Lake Simcoe to update 1983 survey report.
- Additional work will be done on phosphorus transport and mass balance in Lake Simcoe in terms of lake effects and historical changes.
- Certificates of Approval for STPs in Lake Simcoe basin will be amended to include effluent concentrations and annual loading.

Comments: - This watershed is not highly developed although many lakes are heavily used by seasonal cottagers.

- Most discharges to surface waters are from sewage treatment facilities. Presently, the STPs operate satisfactorily, but eutrophication is still a problem in Gravenhurst Bay due to high phosphorus discharges prior to 1971.
- A Bracebridge landfill site is causing groundwater contamination problems. Additional studies will be done on the Bracebridge landfill site in 1987-88.

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2EB Moon River (continued)					

Comments: -
Gravenhurst landfill site is causing surface water quality problems. The site is being monitored with surface and groundwater being sampled. The results of this monitoring will be assessed to determine leachate movement. No action will be taken until the results of monitoring are known.

- A Muskoka Lakes landfill site (closed) is causing minor surface water problems. Research by the University of Guelph has been completed and reported. Their findings indicated that spray irrigation of leachate at this site is not environmentally feasible unless leachate generation is greatly reduced. Options to achieve this were outline in the report.
- Water Resources Branch has been asked to do further field studies on Gravenhurst Bay to varify the phosphorus budget in order to assess water quality implications of future expansion of Gravenhurst STP.
- Additional research from 1987 to 1989 will be done by the University of Guelph to assess the feasibility of slow rate infiltration of leachate on land in various areas of Ontario. The objective is to develop guidelines for using this technique for leachate treatment.

SOUTHEASTERN REGION

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2MC					
Lower	In-1	5, 6, 9, 13	i, c, b	5, 3, 4	b, c, d
St. Lawrence River	Trans-1	19 (PCBs)	i	5	b, d
(Cornwall-Massena)	Ur-1	6	c	3	b, d
	STP-1	6	c	3	b, d

Comments: - Fish, sediment and water contaminated with PCBs, phenols and mercury have been noted downstream of Cornwall/Massena area (Lake St. Francis, Quebec). Sources include Domtar, CIL and Courtaulds in Cornwall, and Alcoa and G.M. in Massena (N.Y.).

- Massena sources of PCB contamination are under investigation and abatement measures proposed for inclusion in upcoming SPDES permit renewals.
- Bacterial contamination problems result from Domtar discharges and from sewage by-passing the Cornwall STP.
- Cornwall phenol and bacterial problems violate water quality objectives, necessitating policy review for pulp and paper related phenol wastes and Klebsiella bacteria.
- St. Lawrence River at Cornwall has been selected as a MISA Pilot Study site. The MISA study commenced in the spring of 1986.
- A draft Remedial Action Plan for the St. Lawrence River - Cornwall IJC Area of Concern is scheduled for completion by March, 1989.
- A Water Resources Branch study of Courtauld's discharges was undertaken during 1985. Courtauld's Control Order is under development.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2MB West St. Lawrence River	In-1	10	h	5	d

Comments:
- Control Order abatement program at Nitrochem in Maitland is scheduled to be fully implemented by July 31, 1987.
- Elevated alkyl lead levels in fish immediately downstream of the now decommissioned Dupont tetraethyl lead plant at Maitland resulted in the issuance of fish consumption advisories in 1985 and 1986.
- The fish consumption advisory for lead downstream of Dupont Maitland has now been removed based on analyses of fish collected in the fall of 1986.

2MA Western St. Lawrence Tributaries	Ur-1	6, 4	c, b	3, 5	d
	Ag-1	4, 6, 2	c, b	3, 5	b
	L-1	5, 1, 10	h, g	5	b
	STP-1	1, 4, 6	c, b	3, 5	d

Comments:
- In general, water quality is good in the Western St. Lawrence River tributaries.
- Sewer separation programs are in progress in Kingston and Brockville to reduce storm sewer overflows.
- Agricultural activities, ie. cattle watering, manure and erosion, have minor impacts on water quality.
- An abatement program to correct leaching problems from Brockville landfill site is required.
- Hydraulic capacity upgrading is needed at Gananoque sewage treatment lagoons.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2LB					
Lower Ottawa River	Ag-1	2, 4, 6	b, c, g	2, 3, 4, 5	b, d
	STP-1	1, 4, 6	a, b, d	3, 6	d
	Trans-1	1, 4, 6	a, b, c	3, 5	d
	Pr-2	6	c, k	1	d

Comments:
- The Ottawa River Water Quality Coordinating Committee Report was released in March 1987.
- South Nation River has been identified as a major contributor of nutrients to the Ottawa River. Agriculture (manure and erosion), municipal and industrial sources have contributed to the problem.
- STPs on the Ontario side of the river have adequate treatment but raw sewage is being discharged from the Quebec side of Ottawa River.
- Private services correction programs are in progress to correct water supply contamination problems at several communities.
- A major abatement program has been initiated by Ault Foods at Winchester and upgrading of the Winchester lagoons will result in a substantial reduction of phosphorus loadings to the South Nation and Ottawa rivers.
- A cooperative MOE/OMAF/Conservation Authority project has been initiated in the South Nation river basin to identify and abate diffuse source agricultural water quality impacts.

2LA					
Rideau River	O-1	9	e, g, h, l	9	d
	Ur-1	6, 4	c	3	b, d
	STP-1	1, 4	b, a	5	d
	Ag-1	4, 6, 2	c, b	3, 5	b

Comments:
- Agricultural problems associated with bacterial and nutrient contamination require attention throughout the watershed.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2LA (continued)					
Comments: - Urban runoff is affecting beaches in Ottawa. A recently completed stormwater management study recommends an urban runoff control strategy, and awaits action by Regional Municipality of Ottawa-Carleton. - Expansion and upgrading is required at the Smiths Falls STP. An Environmental Assessment Report for expansion of Kemptville STP is complete. - Coal tar has been discharged to and deposited in Rideau River at Ottawa. Clean-up of river sediments began in 1986 and will be completed in 1987.					
2KF Mississippi River-Lac Deschenes	STP-1 At-1	2, 4, 6 7	c, b d	3 5	b b, c
Comments: - Water quality is generally good in the watershed. - Localized manure and cattle watering problems require attention. - Some lakes are sensitive to acid precipitation. International efforts are required.					
2KE Lower Madawaska River	STP-1	6	c	3	b
Comments: - Most of the watershed has excellent water quality. - Sewage bypassing at Arnprior has resulted in bacterial contamination at the river mouth and may require additional abatement measures.					

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2KC					
Allumette Lake-	Ag-1	4	b	2, 5	b
Lac Des Chats-	O (road oiling)-1	19 (PCBs)	i	3, 5	a
Ottawa River	STP-1	4, 1	b	5	d

Comments:
- Most of the watershed has excellent water quality.
- Agricultural sources of nutrients affect Muskrat Lake.
- PCB clean up at Lake Clear has been completed.
- Phosphorus removal facilities have been added to Eganville STP.

2KB
Petawawa River — Good water quality in the watershed. No discharges of environmental significance.

2KA					
Holden Lake-	At-1	7	d, g	5	b
Ottawa River	In-1	1	a	5	b, c
	Trans-1	1	a	5	b, c

Comments:
- Most of the watershed has good water quality but some lakes are sensitive to acid precipitation.
- Low dissolved oxygen problems in Ottawa River are caused by pulp and paper discharges from Quebec.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HM					
1. Eastern Lake Ontario-Upper St.Lawrence River	Ag-1	4, 6	b, c	5	b
	In-1	9	i	5	b
	L-1	9	i	5	b
	Trans-1	9	i	5	b
	Ur-1	6	c	3	b, c
Comments: - Fish contamination problems are mainly attributable to industrial and landfill discharges of organics in western Lake Ontario - Niagara River. - Kingston area beaches are affected by urban runoff. A bacteriological study was completed in 1985 and abatement strategies are presently being developed. - City of Kingston is currently carrying out a sewer separation program.					
2. 6 Eastern Lake Ontario Tributaries	Ur-1	6, 4	c, b	3, 5	c, d
	Ag-1	4, 6, 2	c, b	5, 3	b
	In-1	1, 4	a, b	5	d
	STP-1	4, 1	b, a	5	d
Comments: - Cattle watering, manure runoff, erosion and other problems associated with agricultural activities have the greatest impact on surface water quality. Control measures are required. - The Napanee River STP has been expanded and upgraded, but phosphorus levels in discharges remain in excess of requirements as a result of dairy waste inputs. Pre-treatment at industrial source will begin in 1987. - Contamination of Wilton Creek with organic wastes from Harrowsmith Cheese requires abatement. The problem is being examined by a consultant. - Bacteriological contamination of the Kingston Inner Harbour is resulting from industrial sources.					

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HL					
Moira River	Ag-1	4, 6, 2	c, b	4, 5	b, c
	Ur-1	6	c	3	d

Comments: - Water quality problems associated with agricultural activities, ie. cattle watering, erosion, and manure runoff, are of minor significance.
- Bacteria contamination is caused by storm sewers and from the Corbyville Distillers.

2HK					
Trent River-	In-1	6, 13, 9, 2	c, i	3	a, b, d
Crowe River	Ag-1	4, 2, 6	b, c	3, 5	b
	Mi-1	8	i	3, 5	d

Comments: - Madawaska Mines have closed and radiological contamination is not significant.
- A water quality survey of Cold Creek initiated by the Region during 1986 identified a need for abatement of agricultural sources of contamination during 1987.
- Abatement programs are being developed to deal with industrial discharges from Trent Valley Paper, Domtar Packaging and Domtar Wood Preserving to resolve their status of non-compliance with C of A limits.
- A bacteriological survey is to be undertaken at Trenton during 1987 to identify sources of impairment.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAIN POLLUTION SOURCES	MAIN PROBLEM PARAMETERS	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF ENVIRONMENTAL PROTECTION EFFORTS
2HE					
1. Prince Edward County Streams	Ag-1	4, 6, 2	b, c, g	5, 3	b
	In-1	4, 1	b	5	b
Comments: -	Most streams are turbid, nutrient enriched, and contaminated with bacteria as a result of manure runoff, erosion and cattle watering. Control measures are required.				
-	Major water quality assessment of nutrient enrichment status and sources affecting West Lake was completed during 1986. Interpretation of data suggests that Cobi Foods wastewater is the major source of phosphorus affecting West Lake water quality. An abatement program is being undertaken by Cobi Foods. Agricultural inputs may also be significant.				
2. Lake Ontario-Bay of Quinte	STP-1	4, 6	a, b, c, e	2, 4, 3	b, d
	Ag-1	4	a, b, e	2, 4	b
	Ur-1	6, 4	c	3	b, c
	In-1	13, 9	i	5	a
Comments: -	The Bay of Quinte has been identified as an IJC Area of Concern.				
-	A draft Remedial Action Plan for the Quinte Area of Concern is scheduled for completion by June 1988.				

SURFACE AND GROUNDWATER QUALITY EVALUATION SUMMARY

The chart below summarizes the number and percentage of 144 tertiary watersheds in the Province affected by different pollution sources. Individual watersheds may be affected by more than one pollution source.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds affected by agricultural runoff:				
. Surface Water	32 (22%)	34 (24%)	32 (22%)	33 (23%)
. Groundwater	13 (9%)	14 (10%)	13 (9%)	13 (9%)
No. of watersheds affected by direct industrial discharges:				
. Surface Water	36 (25%)	39 (27%)	35 (24%)	39 (27%)
. Groundwater	3 (2%)	3 (2%)	0 (0%)	2 (1%)
No. of watersheds affected by urban runoff/ stormwater discharges:				
. Surface Water	22 (15%)	24 (17%)	21 (15%)	22 (15%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds affected by sewage treatment facility discharges:				
. Surface Water	36 (25%)	39 (27%)	36 (25%)	37 (26%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No. of watersheds affected by private sewage systems:				
. Surface Water	6 (4%)	6 (4%)	6 (4%)	6 (4%)
. Groundwater	18 (13%)	19 (13%)	19 (13%)	19 (13%)
No. of watersheds affected by atmospheric deposition:				
. Surface Water	15 (10%)	15 (10%)	15 (10%)	16 (11%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No. of watersheds affected by landfill site leachates:				
. Surface Water	5 (3%)	8 (5%)	3 (2%)	7 (5%)
. Groundwater	15 (10%)	20 (14%)	12 (8%)	22 (15%)

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with water pollution problems caused by specific non-Ontario sources:				
. Surface Water	6 (4%)	6 (4%)	6 (4%)	6 (4%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No. of watersheds affected by storage facility leaks:				
. Surface Water	1 (1%)	0 (0%)	0 (0%)	0 (0%)
. Groundwater	15 (10%)	12 (8%)	13 (9%)	12 (8%)
No. of watersheds affected by road deicing application:				
. Surface Water	0 (0%)	0 (0%)	0 (0%)	0 (0%)
. Groundwater	15 (10%)	16 (11%)	13 (9%)	16 (11%)
No. of watersheds affected by mineral extraction:				
. Surface Water	8 (6%)	8 (6%)	7 (5%)	9 (6%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds affected by water well drilling:				
. Surface Water	0 (0%)	0 (0%)	0 (0%)	0 (0%)
. Groundwater	1 (1%)	1 (1%)	0 (0%)	1 (1%)
No. of watersheds affected by dredging/ dredged spoils disposal:				
. Surface Water	3 (2%)	3 (2%)	3 (2%)	3 (2%)
. Groundwater	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No. of watersheds affected by other sources of pollution, namely stream rechannelization, lakefilling, logdrive, spills, and road oiling:				
. Surface Water	5 (3%)	5 (3%)	4 (3%)	5 (3%)
. Groundwater	1 (1%)	1 (1%)	5 (3%)	1 (1%)

APPENDIX G

SURFACE WATER QUALITY EVALUATION BY SECONDARY WATERSHED

1986-87 Actual

The indicators identified in the following bar charts, and their respective Provincial Water Quality Objectives are:

DO	-	Dissolved Oxygen	-	Objective:	See Table, p.33, Water Management, M.O.E., 1978
TP	-	Total Phosphorus	-	Objective:	0.03 mg/L
FC	-	Fecal Coliforms	-	Objective:	100/100 mL
NH_3	-	Un-ionized Ammonia	-	Objective:	0.02 mg/L
FE	-	Iron	-	Objective:	0.3 mg/L
PHE	-	Phenols	-	Objective:	1 ug/L

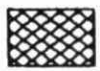
For each indicator, six patterns are used to represent criteria exceedences:

represents 0% exceedence: the objective was not exceeded in any samples for the stated percentage of stations.

represents 1-24% exceedence: the objective was exceeded for 1% to 24% of the samples for the stated percentage of stations.

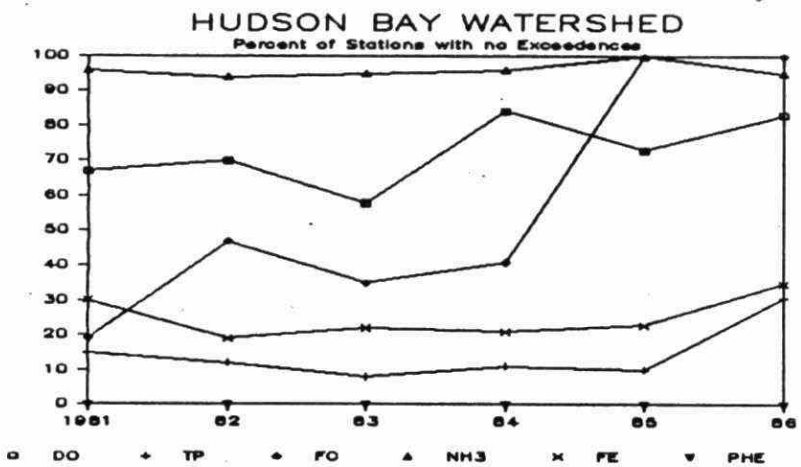
represents 25-49% exceedence: the objective was exceeded for 25% to 49% of the samples for the stated percentage of stations.

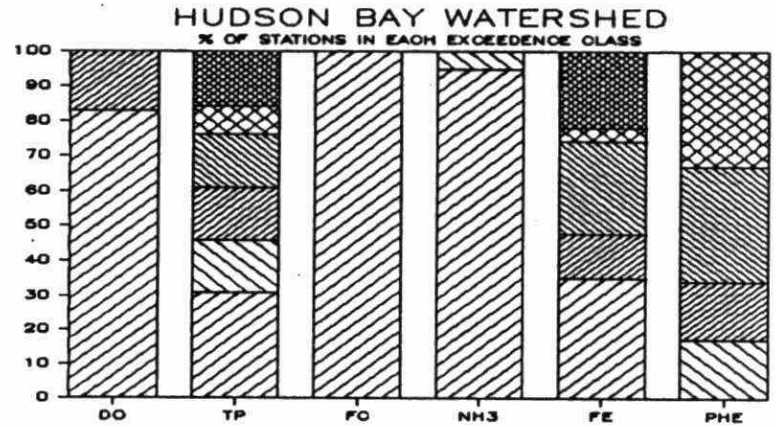
represents 50-74% exceedence: the objective was exceeded for 50% to 74% of the samples for the stated percentage of stations.



represents 75-99% exceedence: the objective was exceeded for 75% to 99% of the samples for the stated percentage of stations.

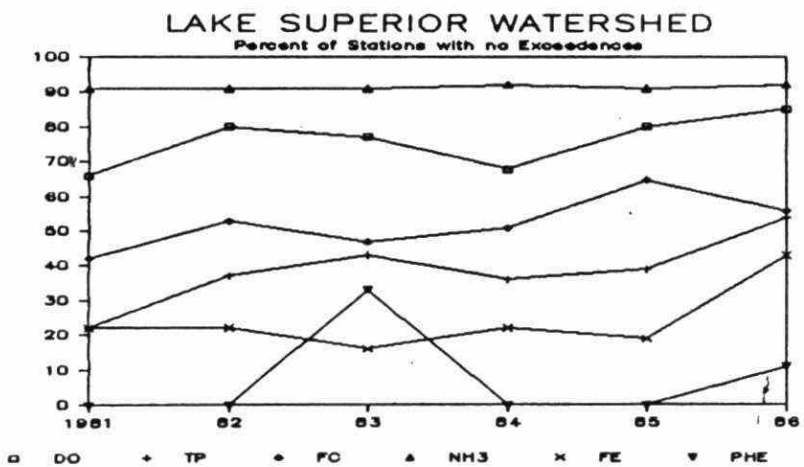
represents 100% exceedence: the objective was exceeded in all samples for the stated percentage of stations.

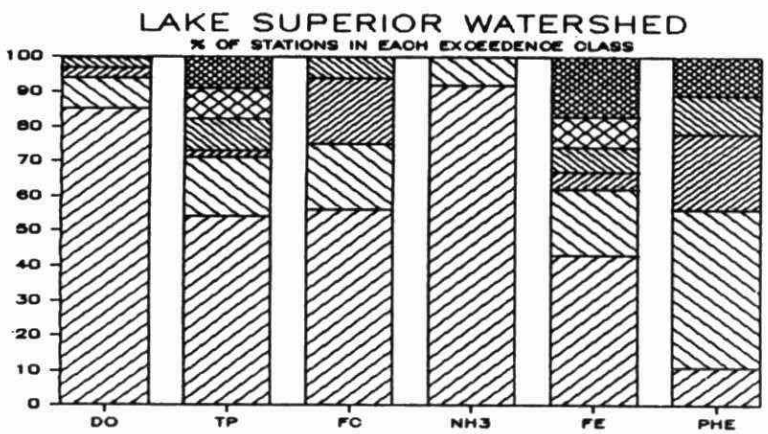




Historical Trends:

Stations with Improving Trends	0
Stations with No Trends	1
Stations with Deteriorating Trends	0





Historical Trends:

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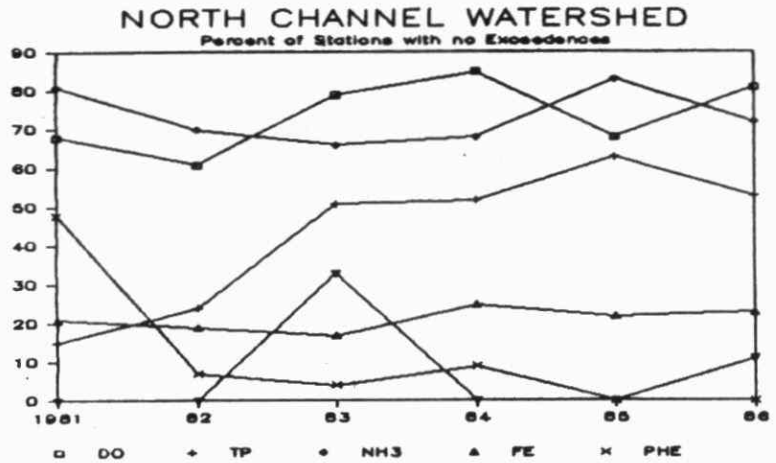
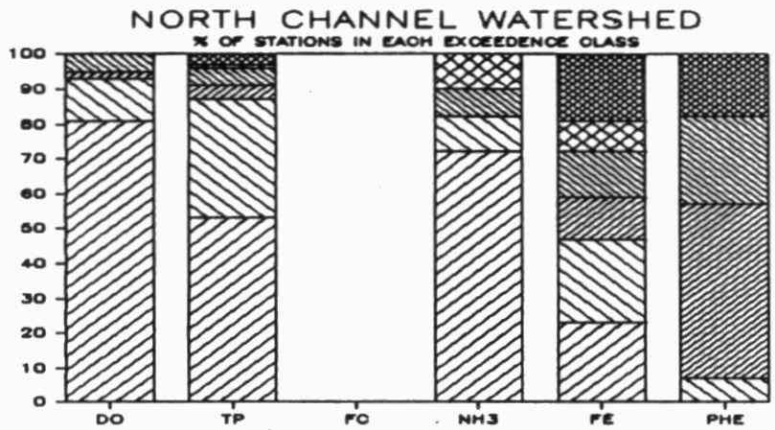
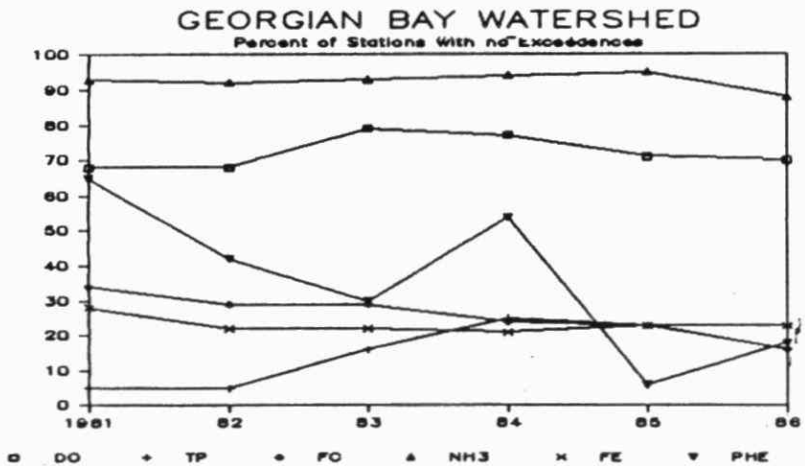
Stations with No Trends	1
Stations with Deteriorating Trends	0

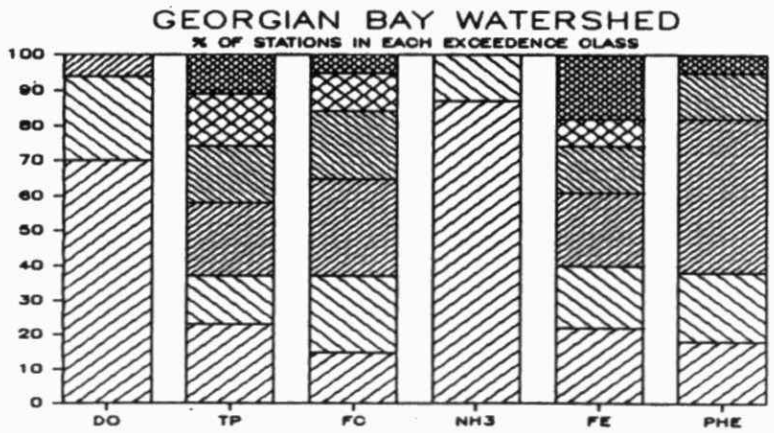




Historical Trends:

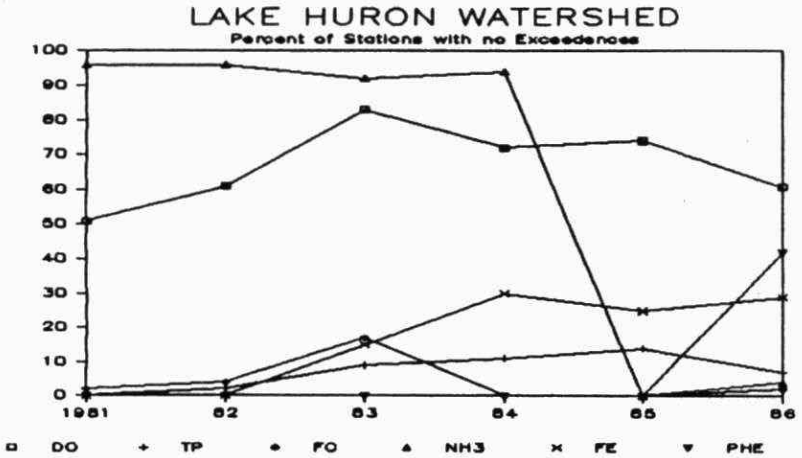
Stations with Improving Trends	0
Stations with No Trends	1
Stations with Deteriorating Trends	0

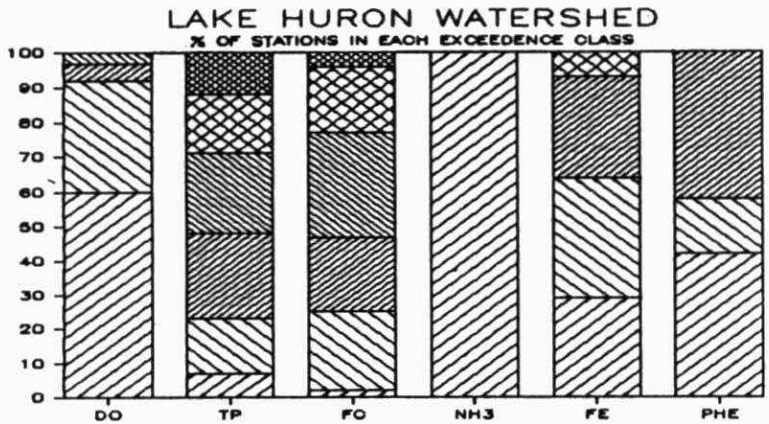




Historical Trends:

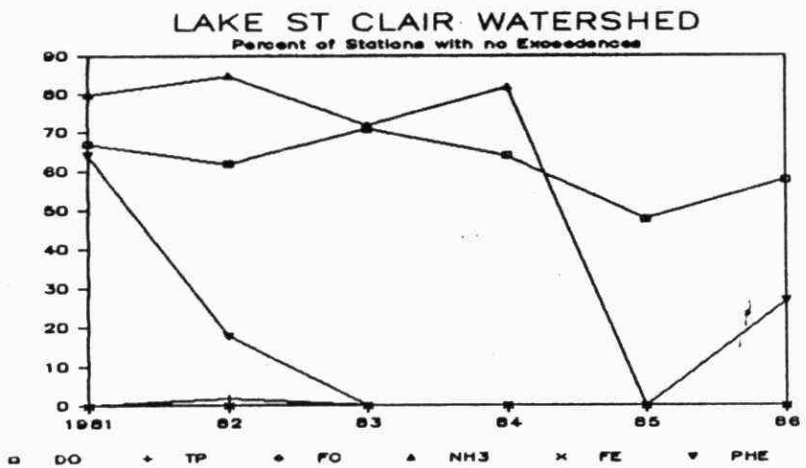
Stations with Improving Trends	6
Stations with No Trends	25
Stations with Deteriorating Trends	0

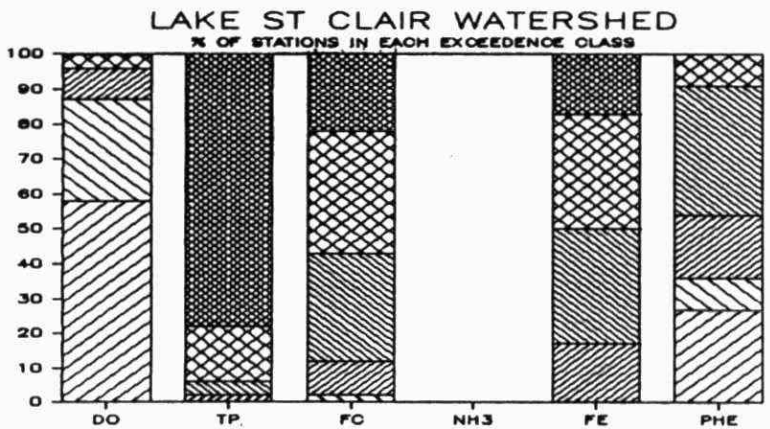




Historical Trends:

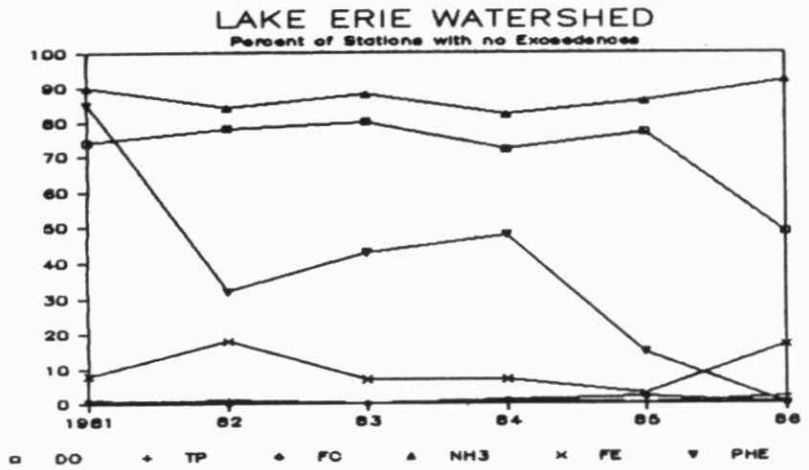
Stations with Improving Trends	6
Stations with No Trends	12
Stations with Deteriorating Trends	2

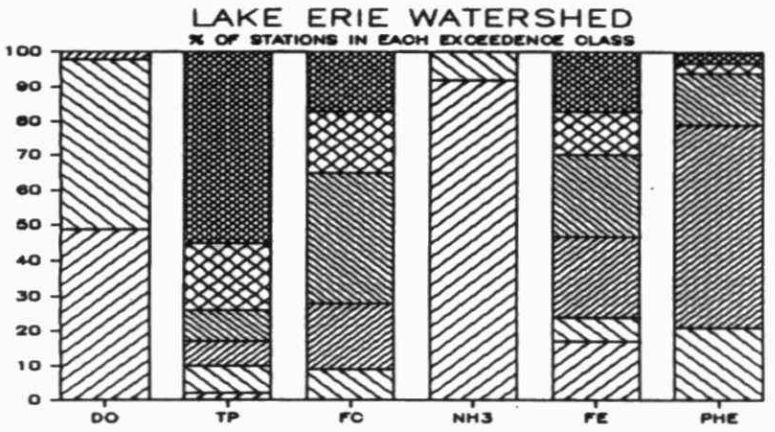




Historical Trends:

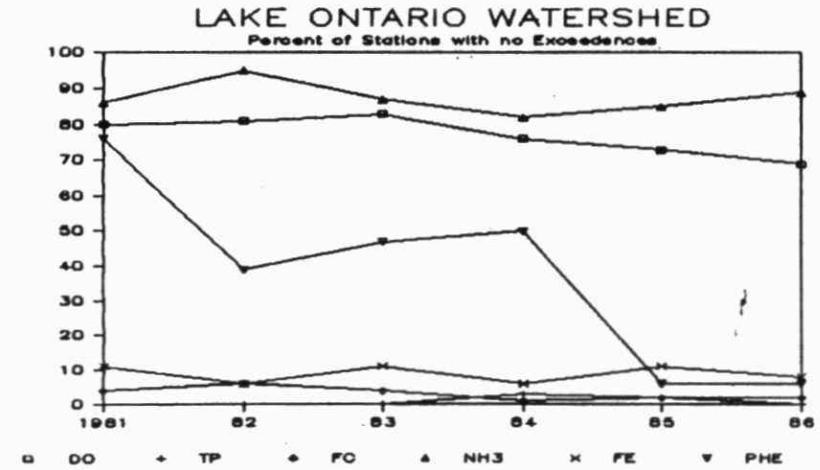
Stations with Improving Trends	1
Stations with No Trends	2
Stations with Deteriorating Trends	0

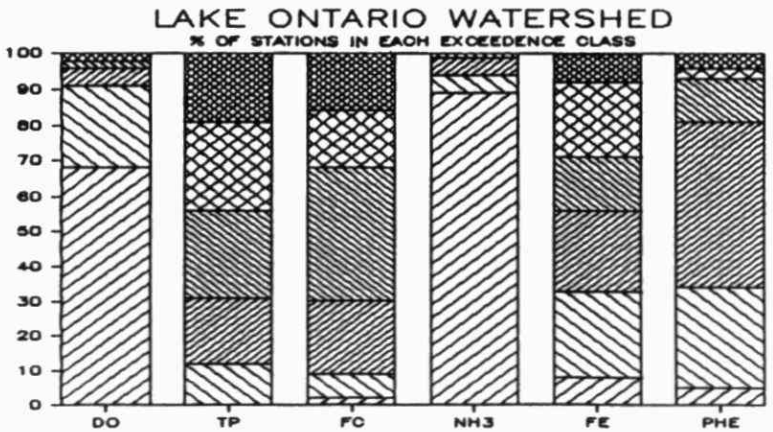




Historical Trends:

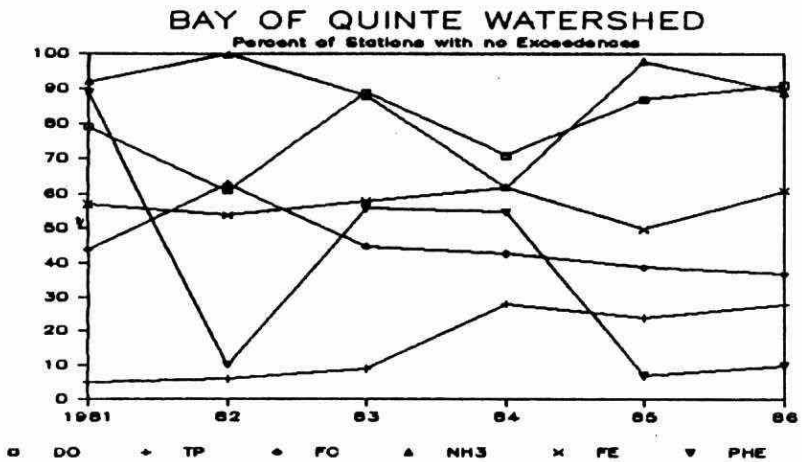
Stations with Improving Trends	16
Stations with No Trends	14
Stations with Deteriorating Trends	1

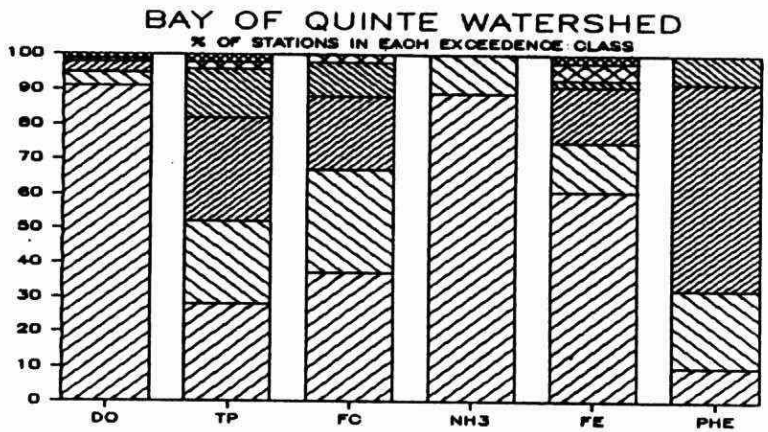




Historical Trends:

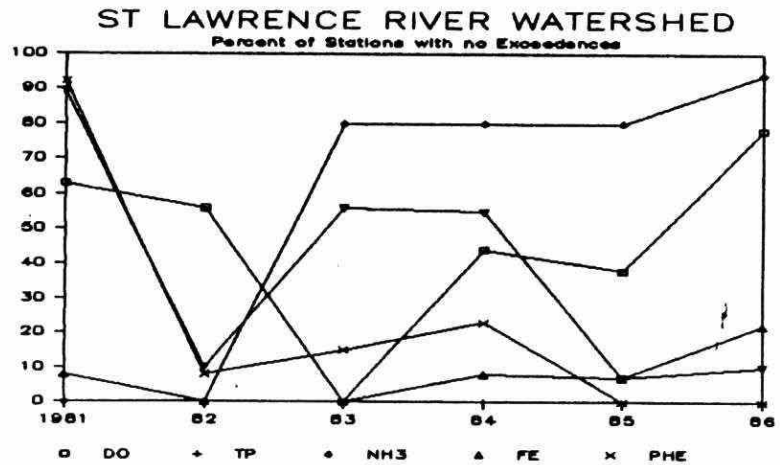
Stations with Improving Trends	27
Stations with No Trends	10
Stations with Deteriorating Trends	4

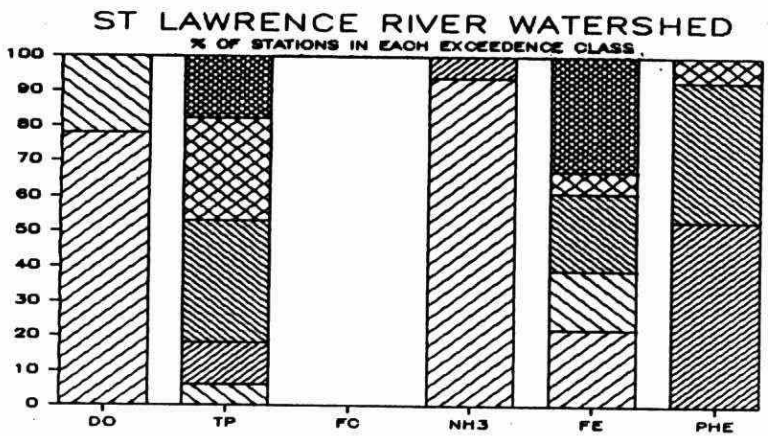




Historical Trends:

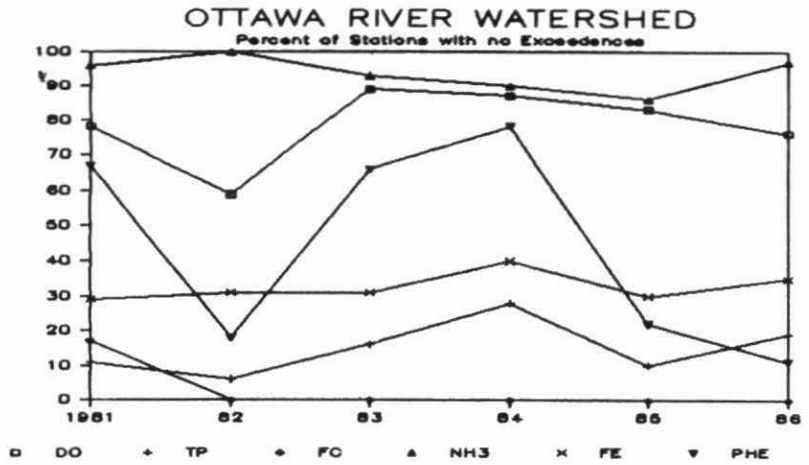
Stations with Improving Trends	7
Stations with No Trends	2
Stations with Deteriorating Trends	0

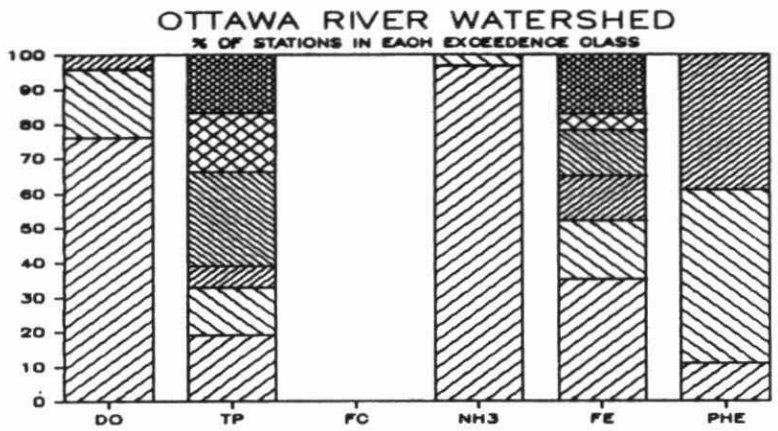




Historical Trends:

Stations with Improving Trends	0
Stations with No Trends	9
Stations with Deteriorating Trends	0





Historical Trends:

Stations with Improving Trends	1
Stations with No Trends	0
Stations with Deteriorating Trends	0

APPENDIX H

SURFACE AND GROUNDWATER QUANTITY EVALUATION BY TERTIARY WATERSHED

SURFACE AND GROUNDWATER QUANTITY EVALUATION BY TERTIARY WATERSHED

The evaluation of the 144 Tertiary watersheds in the Province, on the following pages, utilize this structure and coding system:

MAJOR WATER USES

13 CATEGORY POSSIBILITIES:

1A: Agricultural Irrigation
1B: Agricultural Supply
1C: Agricultural Drainage

2A: Commercial Supply

3A: Industrial Supply
3B: Industrial-Extractive
3C: Industrial-Construction Dewatering and Drainage

4A: Public (Municipal) Supply
4B: Private (Domestic) Supply

5A: Recreation & Aesthetics
5B: Water & Wildlife Conservation

6A: Waste Assimilation
6B: Assimilation Augmentation

9 SOURCE POSSIBILITIES:

1. Groundwater Source
   - 1a Wells(s)
   - 1b Flowing Well(s)
   - 1c Well Point(s)
   - 1d Pit, Quarry or Excavation
   - 1e Dugout Pond
2. Surface Water Source
   - 2a Dugout Pond
   - 2b By-pass Pond
   - 2c Off-stream Pond
3. Surface Water Source (Direct withdrawal) Flow or volume from stream, lake, river

Example:
4A:1a Municipal Supply Wells

EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES

11 CATEGORY POSSIBILITIES:

1) Excessive withdrawal regularly
2) Excessive withdrawal seasonally
3) Excessive withdrawal intermittently
4) Potential heavy demand on available supply
5) Excessive concentration of water wells
6) Excessive concentration of surface withdrawals
7) Improper well maintenance
8) Improper pond (dam) management
9) Water management at major construction project
10) Number of agricultural drains
11) Release of water resulting in waste

2 STATUS POSSIBILITIES:

P potential problems
- existing problems

Example:
10P Number of agricultural drains considered as potential problem

ENVIRONMENTAL EFFECTS

11 POSSIBILITIES:

1) Interference with stream flow uses resulting in:
   - a. poor aesthetics
   - b. impairment of aquatic habitat
   - c. impaired water quality
   - d. reduced waste assimilation capacity
   - e. impaired pond operation
2) Reduction of streamflows resulting in interference with downstream water uses
3) Mining of groundwater
4) Short-term lowering of water levels in the shallow groundwater zone
5) Long-term lowering of water levels in the shallow groundwater zone
6) Rebounding water table
7) Short-term discharge resulting in washout

MAIN IMPACTS

5 CATEGORY POSSIBILITIES:

1) Potential for additional water use limited
2) Special or unique features of the watercourse are damaged or altered by flows
3) Interference with withdrawal water use
4) Interference with in-stream water use
5) Other (specified)

4 AFFECTED USE POSSIBILITIES:

A) private
B) municipal
C) agricultural
D) industrial

Example:
3-A Interference with private withdrawal water use

STATUS OF WATER MANAGEMENT EFFORTS

11 CATEGORY POSSIBILITIES:

A) Water use meets requirements specified by relevant Permit, Certificate Order, standard, guideline, or criterion
B) Further action is required to bring water use under control
C) Additional regulatory programs or policies are required
D) Action may be required:
   1) affected water supplies must be restored to prior conditions
   2) alternate supply sources must be located
   3) major capital projects are required to correct situation
   4) short term water supply must be provided
E) Enforcement of regulation or policies planned or under way
F) Assessment/Monitoring of impact under way
G) Action unwarranted; charges for violations less than benefit gained
H) Resolution of issue complete

8 PROGRAM STATUS POSSIBILITIES:

1. Permit to Take Water Program
2. Water Well Management Program
3. Water Well Inspection Program
4. Streamflow (Fed/Prov Cost-Share) Program: Monitoring
5. Observation Well Program: Monitoring
6. Provincial Surface Water Quality Network: Monitoring
7. Provincial Ground-Water Quality Network: Monitoring
8. Regional Investigation Program

Example:
A)-1 The use meets assigned requirements under the Permit to Take Water

SURFACE AND GROUNDWATER QUANTITY EVALUATION BY TERTIARY WATERSHED

NORTHWESTERN REGION

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2BB Pic River, Black River, Cedar Creek Watersheds	3B-1a	3	1-a, b & c, 2	-	B-1, F-1
Comments: -	A recent gold find in the Cedar Creek area has resulted in the construction of three new mines. Permit applications for development and to process water have been received. A watershed management study has been completed. Interim permits to take water have been issued. Cedar Creek flows have been augmented. Potential conflicts in water use between industry and cottaging may require resolution.				
2AC Lake Superior Tributaries (Black Sturgeon River)	2A-1c, 3	No current environmental issue		-	-
Comments: -	This watershed contains the largest fish hatchery operation in Northwestern Ontario. The watershed provides more than adequate flows and no problems are anticipated.				

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2AB					
1. Thunder Bay Harbour and contributing Tributaries excluding Kaministiquia River (Lake Superior)	3A-3	8	No current environmental issue		A-1 & 6
Comments: -	A major construction project for flood control purposes has been completed on the McIntyre and Neebing Rivers. This project was exempt from the Environmental Assessment Act and was directed by the local conservation authority. No interference problems have arisen or are anticipated.				
2. Kaministiquia River and Watershed	3A-3	1, 2	1-a, b, c & d	1-D	B, F-8
	2A-3	No current environmental issue		-	-
	4A-1a	No current environmental issue		-	-
Comments: -	The Kaministiquia River is a multi-purpose source serving a variety of interests. All major intakes are presently under permit. Some problems have been experienced during dry years with Strawberry Creek, a minor tributary. Kam Aggregates Ltd., a gravel extraction and washing operation, has been making excessive seasonal demands. Company negotiations are continuing. The Kaministiquia River itself is heavily stressed from a quality standpoint owing to inadequate assimilative capacity. A major water quality survey was conducted in the summer of 1986. A flow augmentation study is planned for 1987 or 1988.				

NORTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
5PC					
Lower Rainy River	4A-3-1a	6	-	5	A-1 & 6, F, D-3
	3A-3	2	1-a, b, c & d	1-D	A-1 & 6
	4B-1a	7	-	5 (groundwater contamination)	D-3 & 8
Comments: -	The Rainy River and associated watershed provides a number of towns with both private and municipal water supplies. Some groundwater contamination has been experienced in the Town of Barwick due to poor well construction and septic field failure. A communal sewage collection system has been constructed. A review of municipal and agricultural drains within the watershed has been conducted. No environmental problems have been encountered. Low precipitation in 1986 has resulted in low flows in the Rainy River. Water quality problems have not been encountered.				
5QC					
Red Lake,	3B-3	4-P	1-b & c	1-D	A-1 & 6
Balmer Lake	4A-3	No current environmental issue		-	-
Comments: -	Red Lake and Balmer Lake are major sources of mine process water and municipal supply for the development area of Red Lake. Due to the size of the existing drainage basin, adequate quantities are available for all uses. Routine monitoring is conducted under the Provincial Water Quality Monitoring Program.				

NORTHEASTERN REGION

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
Geog. District	4A-3	No problems	-	-	A-1
Parry Sound	3A-3	-	-	-	A-1
Comments: -	Both municipal and industrial users draw water from large water bodies. A potential water release problem exists with the industrial water.				
Geog. District	3A-3	11-P	1-c	4-A	A-1, B, F-8
Nipissing	4A-3	No problems with large lakes	-	-	A-1
Comments: -	Both municipal and industrial users draw water from large water bodies. A potential problem exists with the release of industrial water. MacMillan Bloedel has an assimilative capacity problem as a result of insufficient water quantity. A Control Order requires the company to meet a dissolved oxygen objective of 47% saturation in the Lower Sturgeon River. MNR has developed a water management plan for the Sturgeon River that provides some augmentation of low flow conditions.				
Geog. District	3B-3	11-P	1-c	4-A	A-1
Timiskaming	4A-1a	7-P	-	3-B (short term)	A-1
Comments: -	Mineral extraction operations and subsequent water quantity usage pose potential water release problems.				

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
Manitoulin Island	4A-3	No problems	-	-	A-1
	3A-3	taking water from Lake Huron	-	-	A-1
	4A-1a	2	4	3	G

Comments: - Most permitted uses draw water from Lake Huron and do not pose any problems.

Geog. District Sudbury	3B-3	11-P	1-c	1	A-1
	4A-3	1-P	4	3-B	A-1
	3A-3	8	1-d	4-B	B, F-8

Comments: - Mineral extraction operations and subsequent water quantity usage pose potential water release problems. There is a past history of water quantity problems with respect to the Spanish River which, in turn, influence quality. A low-flow implementation study was completed on the Spanish River and a water management plan is being required by INCO and E.B. Eddy. E.B. Eddy is required to maintain dissolved oxygen at 47% downstream of Espanola.

NORTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
Geog. District	3B-3	8-P, 3	1-c, 2	1-A, 4	A-1, B, F-8
Algoma	4A-1a	1-P	5	3-B	A-1
Comments: -	The Elliot Lake area poses potential problems with regard to tailings drainage. These are controlled in part by the permit to take water program. The Sault Ste. Marie aquifer at present is totally utilized. A municipal water filtration plant has been constructed and draws water from Lake Superior.				
	At Dunlop Lake, there is a problem with excessive withdrawal by Rio Algom which has resulted in a high level of public concern. Rio Algom is required to control the water level in the lake.				
Geog. District	3B-3	11-P	1-c	4-A	A-1
Cochrane	4A-1a	7-P	-	3-B (short term)	A-1
	3A-3	11	1-c	4-A, D	B,F-8
Comments: -	Mineral extraction operations and subsequent water quantity usage pose potential water release problems. In the past there has been improper maintenance of well water supplies, resulting in short term water quantity problems (i.e., Timmins, Iroquois Falls, Cochrane).				
-	Both pulp and paper mills on the Kapuskasing and Mattagami Rivers have waste assimilation problems due to insufficient flows. Reduced BOD and suspended solids loadings at Kapuskasing have improved the situation.				

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2GC					
15 Lake Erie Tributaries	1A-3 1C-3	2 10	2, 1 1, 2, 4, 5	3-C, 1-C 2-A & C, 4	A-1, G C, F
Comments: -	A substantial portion of Big Otter Creek has little to no streamflow during critical times of the year (summer irrigation season). Permits issued assume that not all irrigators will irrigate at once. Agricultural drainage has reduced base flows.				
2GF					
9 Lake Erie Tributaries (central Lake Erie)	1C-3 4B-1a	10 4	1 -	2-A & C 3-A & C	C D-2 & 3
Comments: - -	Agricultural drainage has destroyed wetland areas and hence reduced base flows. The only local aquifer supplies inadequate quantity for some purposes.				

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2GH					
Essex County, Lake Erie Tributaries	1C-3	10	1, 2, 4, 5	2-A & C, 4	C, F
	3B-1d	1	5	3, 1-A, 3-A & C	A-1, D, E
	1A-1a	2	4	5-A, C	A-1, F
	4B-1a	4	3	-	D-2 & 3
Comments: -	Due to flat topography and tight soils, deepened watercourses are necessary for agricultural drainage. Base flows are very low. Dewatering at a large quarry has lowered water levels in private wells. Local irrigation wells affect nearby private wells. Locally, the only aquifer supplies inadequate quantity for some purposes.				
2GD					
Upper Thames River	1C-3	10	1, 2, 4, 5	2-A & C, 4	C, F
	3B-1d	1	5	3, 1-A	A-1, D
Comments: -	Base flows are reduced through agricultural drainage. Dewatering at large quarries has lowered water levels in private wells.				
2GE					
Lower Thames River	1C-3	10	1, 2, 4, 5	2-A & C, 4	C, F
Comments: -	Base flows are reduced through agricultural drainage. The only local aquifer supplies inadequate quantities for some purposes.				

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2GG St. Clair River and Lake St. Clair Tributaries	1C-3 4B-1a	10 4	1, 2, 4, 5 -	2-A & C, 4 3-A & C	C, F D-2 & 3
Comments: -	Base flows are reduced through agricultural drainage. The only local aquifer supplies inadequate quantities for some purposes.				
2FF 18 Lake Huron Tributaries (south Lake Huron)	1C-3	10	1, 2, 4, 5	2-A & C	C, F
Comments: -	Base flows are reduced through agricultural drainage.				
2FE 2 Lake Huron Tributaries (Central Lake Huron)	1C-3	10	1, 2, 4, 5	2-A & C, 4	C, F
Comments: -	Base flows are reduced through agricultural drainage, a problem which has increased in the past decade.				

SOUTHWESTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2FA Bruce Peninsula Streams	1C-3	10	1, 2, 4, 5	2-A & C, 4	C, F
Comments: -	The Bruce Peninsula has good hydrological conditions. Recently, agricultural drainage has ingressed into this high-quality environmental area, causing concern.				
2FB 14 Georgian Bay Tributaries (Western Georgian Bay)	1C	10, 10P	1	2-A & C	C
Comments: -	This area presently has generally good hydrological conditions. Future threats include agricultural drainage, gravel extraction, small dams and ponds, and small-scale power development.				

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HB					
Lake Ontario and	3B-1d	1	5	3-A	A-1, F
Hamilton Harbour	3C-1d	9-P	5, 4	3-A	B-2, C
	1A-2 &-3	6-P	2	4-C	A-1

Comments: - The major quarry dewatering operations are Steetley Industries and Flamborough Quarries. Steetley has been expanding and has caused a large number of well interference problems. Monitoring is under way and resolution of problems is being carried out. Both quarries are proposing further expansion.

- Excavations for sewers and watermains in Ancaster and Waterdown have caused interference with private water supplies in areas which are not serviced. In some cases where interference is caused by gravity drainage, resolutions of complaints could be difficult to implement since permits are not required.

- Grindstone Creek drains market garden lands which are irrigated. Drought and low flow periods occasionally result in water use conflicts.

WEST CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HA					
Western Lake Ontario Tributaries, Niagara River and Eastern Lake Erie Tributaries	3B-1d	1 & 1P	5	3-A	A-1, E, F
	3C-1d	9, 11 & 11P	5, 4	3-A, 1-A	B-2, C
	3A-1a	3	4	3-A	A-1

Comments: -

There are a large number of major limestone quarries and some gravel pits in this drainage area. Many of these cause water supply interference since pumping is needed to keep the quarries dry. The major quarries are Vineland, Lincoln, Port Colborne, R.E. Law (Hardrock P'V'G.), Ridgeway (Walker Bros.), Campbell (Walker Bros.). The major gravel pit operations using wells are Steed and Evans and Telephone City Gravel in Fonthill. Each one of these operations needs monitoring and surveillance since expansion and deepening of pits and quarries can result in unpredicted interference.

- Construction dewatering or drainage due to urban expansion has caused lowering of groundwater levels when water and sewage services have been installed in deep trenches. Some trenches intersect the water table and drain shallow aquifers. Such interference problems have occurred in the Hamilton/Stoney Creek area (Satellite City) and in Port Colborne.
- Water supply restoration requirements are difficult to implement since legislation is not explicit and permits may not be needed since many of the problems are due to gravity drainage.

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2GA Upper Grand River	4A-1a	1, 4, 5	1-a,b, 2, 3, 5	1-A, 2, 3, 4	A-1, F
	3A-1a	1	1-b,c,d&e, 2, 5	1, 2, 4	A-1, F
	3B-1d	1	1-b,c,d&e, 2, 5	1, 2, 4	A-1, F
	3C-1c	9P	4	3-A	C-5 & 8

Comments: - All municipal water supplies in the Upper Grand River Basin are groundwater sources. Withdrawals of groundwater have resulted in all types of interference and effects. Some industries have caused excessive water level lowerings by pumping wells and gravel pits. The Regional Municipality of Waterloo has an extensive water level monitoring program to aid in water quantity management. Major impacts on water levels and streams have been recorded and have required resolution. As water supplies are developed, additional problems can be anticipated. Smaller municipalities on water wells do not have adequate groundwater management programs and unexpected problems result.

- Region of Waterloo plans to reduce groundwater usage by utilizing surface water. Negligible impacts expected.

2GB Lower Grand River	3B-1d	1	5	3-A, 5-A	A-1, F, E
	1B-1a	5P	5, 3	3-C	D-1

Comments: - The quarry dewatering at Dunnville Rock Products has been carried out for more than 30 years and water level conditions are essentially stable. Their operation and seasonal variation in water levels has resulted in a complaint of pond water level interference which requires long-term evaluation. There are no other major groundwater withdrawals in this area.

WEST CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2GC 15 Lake Erie Tributaries	1A-3 3B-1d	2P, 4, 1P, 3P	2,1-b, 1-e 4, 5	1-A, 3-A	A-1, E-8

Comments: - Tobacco farmers may irrigate heavily to save their crops during drought and may cause stoppage of streamflow. Serious effects have been experienced by the downstream property owners. Fines of $200 for a day's violation are considered reasonable by farmers to save a $100,000 tobacco crop.

- Limestone quarries south of Hagersville, east of Jarvis and north of Port Dover pump water to keep operations dry. This causes lowering of water levels and interference with wells.

- Tobacco farmers are investigating other methods of earning a living including fish rearing which uses large quantities of water which may potentially interfere with other ground or surface withdrawals.

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HK Upper Trent River	5A, 4B, 4A	-	-	-	A
Comments: -	No surface water quantity problems presently exist in the upper reaches of the Trent River basin.				
2HG Scugog River	6A, 5A	4-p	1-a, b,c,& d	1, 4	D-3, 8
Comments: -	The Lindsay WPCP discharges to a wetland area which drains to the Scugog River. The wetland provides additional treatment for the effluent. If the effluent were to discharge directly to the Scugog River, the assimilative capacity would be exceeded. Thus the potential for streamflow shortage exists.				
-	Flows are being studied as part of Sturgeon Lake nutrient budget study (See Appendix G).				

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HC Lake Ontrio Tributaries					
1. Etobicoke-Pickering	4A-1a	4	3	1	A, D-3
	2A	1, 11	4, 5	3	D, E
	4A-1a	7(abandoned wells)	6	5	B

Comments: -
The major well fields in the area are at Richmond Hill (Oak Ridges) and Bolton. The Regions of York and Peel, in co-operation with MOE, have established monitoring programs of the well fields to evaluate aquifer performance (degree of mining) so future development can properly be planned.

- At Ringwood, development of new water supplies for fish hatcheries and golf courses are affecting flowing wells in the area. The administration of Permit to Take Water program is controlling the equitable uses of groundwater resources in the area, however, monitoring of wells in the area is ongoing.

- Special problems are being encountered in the Richmond Hill and Markham areas. Water in these municipalities is now supplied by the York-Durham system, thus the former municipal wells in Richmond Hill and Markham have been abandoned. Due to the cessation of pumping, the water table is rebounding, and in low lying areas the increasing water table is causing wet basements, new springs and drainage problems. Reactivation of some of the former municipal wells may have to be considered to resolve those problems related to the excessively high water table levels.

- A test drilling program successfully located two additional wells for the community of Orono. These wells have been constructed.

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HC (continued)					
2. Stouffville Creek	6A, 3	4	1-a, b, c & d	4-A & D	F
Comments: -	The treated effluent from the Stouffville WPCP discharges to Stouffville Creek. The minimum flow available for sewage assimilation is less than the effluent discharge rate. A streamflow shortage exists in Stouffville Creek. The C. of A. for the Stouffville WPCP stipulates effluent criteria based on the receiving water quality in Ressor Creek, into which Stouffville Creek discharges.				
2HB					
Lake Ontario Tributaries					
1. Burlington-Etobicoke	3B-1d	1	3	1, 3	A, D & E
	4A-1a	1	1-d	5	B, C
	6A-1a	1	1-d	5	B, C
Comments: -	There are two major limestone quarries and some smaller ones in this drainage area. In the two major quarries - the Nelson Quarry in Burlington and the Milton Quarry in Milton- dewatering is needed to facilitate the extraction of limestone. Major groundwater interference is being caused by the dewatering especially in the Nelson Quarry area. Regular monitoring of water levels in the vicinity gives information to evaluate the extent and seriousness of interference. Decisions to replace affected water supplies are based on the evaluation of that data. A number of wells have been replaced to date.				

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HB (continued)					
2. Credit River	6A-3	4	1, a, b, c & d	1-A, & D	F
	4A	4	1d, 5	4-A, & D	
				3	F

Comments: - The treated effluent from the Acton WPCP discharges to Black Creek and the effluent from the Georgetown WPCP to the Credit River west branch. Both plants are operating below capacity, but even at the present discharge rates, the effluents are equal to or greater than the estimated minimum streamflows. Both of these STPs will soon be applying for expansion. Water quality data downstream from these plants do not meet the Provincial Water Quality Objectives periodically. When the capacity of each plant is reached, a potential water quantity problem may arise. There are pressures for further development in these municipalities with the associated increase in effluent discharge rates.

- In the Halton Hills area, future proposed development puts a strain on existing well supplies. Development of new well water supplies is expected to have a serious effect on the baseflow in Black Creek which in turn would seriously affect the already restricted assimilative capacity of that watercourse. Additional standby wells have been developed in the northern part of Halton Hills.

- Test drilling locations have been selected to minimize potential impact of pumping on the baseflow of Black Creek and local well water users. MNR has expressed concern that additional municipal well development at Georgetown may impact fisheries in Black Creek due to reduced flow.

3. Oakville Creek	6A-3	4-P	1-a, b, c & d	1-A, 1-D 4-A, 4-D	F

Comments: - A stream diversion at a quarry above the Halton Hills and Kelso reservoirs is planned. An inter-Ministry and Conservation Authority team will review the proposal. There is concern that the proposed diversion will result in a by-passing of flow at the Halton Hills reservoir and cause insufficient baseflow for effluent assimilation in Oakville Creek from the Milton STP.

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2ED Georgian Bay Tributaries (Innisfil - Bailey Creek)	1A-3	2-P	2	3-C, 4-A	B

Comments: - Streamflow depletion due to extraction of irrigation water from Bailey Creek is experienced regularly.
- An STP effluent discharge from Cookstown to Innisfil Creek has been approved.

2EC 1.	Lake Simcoe Basin	4A, 5A	4	3	1	A, B, D & E

Comments: - The diversion scheme to remove treated effluent from the Newmarket and Aurora sewage treatment plants was completed in June 1984. The sewage flows from these towns are now pumped to the Duffin Creek STP. The base flow of the Holland River has been substantially reduced.
- A groundwater exploration program started in Innisfil Township at the western shore of Lake Simcoe to determine whether groundwater is a viable alternative to resolve the water supply problems along the shore of Lake Simcoe. An initial study has been completed and a second study is ongoing to assess the most feasible ways to supplement water supply.
- A test drilling program has been carried out to develop additional groundwater supplies for the Town of Bradford.

CENTRAL REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2EC (continued)					
2. Severn River	5A, 4A	11, 10	1-c, b & a	1-b, c, d	E & F
	6A	3	2	4-a	E & F
Comments: -	Water quantity problems exist seasonally in the Severn River due to the operation of dams by Ontario Hydro and locks by the Trent-Severn Waterway. A Watershed Study Committee has recommended possible solutions.				
2EB					
Moon River and Go Home River	5A, 4A, 4B	-	-	-	A
Comments: -	No surface water quantity problems presently exist in this basin.				

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2MC Lower St. Lawrence Tributaries (Raisin River & Delisle River)	5A	No problems	-	-	A
	4A, 3A	4	1-d	1	Other
	6A	4	1-c	1	Other
Comments: -	No water quantity problems exist in the Raisin River basin.				
-	Flows in the Delisle River are controlled by the Town of Alexandria by virtue of water rights. The town obtains its water supply from the river. The town's sewage lagoons discharge continuously to the river and at times dilution flow is practically non-existent. There is little potential for management of flows to provide assimilation augmentation. Additional waste treatment is being considered to improve stream water quality.				
2MA Western St. Lawrence Tributaries (Cataraqui River & Gananoque River)	5A	No problems	-	-	A
	5A	No problems	-	-	A
Comments: -	No water quantity problems exist in the Cataraqui or Gananoque River basins.				

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2LB					
South Nation River	4A-3	4-P	-	1-B	D2
	1C	10-P	2, 1d	3-B	D2
	4A-1a	4-P	-	3	D1-1
	6A	4-P	1b	5	D3-1
	4A-1b	4-P	-	3	F

Comments: - The South Nation River basin has an extensive and still expanding network of agricultural outlet drains. The Casselman water supply is drawn from the river and further reduction to the low flows at Casselman could become critical. The South Nation River Basin Study has attempted to deal with this issue. Test drilling for additional municipal supplies continues, but some private wells should also be restored. Water shortages are experienced with private servicing of new subdivisions. Plan reviews are required. A new municipal well servicing Winchester has interfered with private wells. These supplies have now been restored.

2LA					
Rideau River	4A-3	-	-	-	A
	6A	-	-	-	A
	5A	-	-	-	A

Comments: - No water quantity management problems exist or are anticipated. Flows are regulated by the Rideau Canal Authority.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2KF					
Mississippi River	4A-3	-	-	-	A
	6A	-	-	-	A
	5A	-	-	-	A
Comments: -	No water quantity management problems exist or are anticipated. Flows are regulated by the Ontario Hydro and the Mississippi River Conservation Authority.				
2KD, 2KE					
Madawaska River	4A	-	-	-	A
	5A	-	-	-	A
	6A	-	-	-	A
Comments: -	No significant water quantity management problems exist or are anticipated. Flows are regulated by Ontario Hydro for power generation.				
2KC					
Bonnechere River	5A	-	-	-	A
	6A	-	-	-	A
Comments: -	No existing problems.				

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2K, 2L					
Ottawa River	4A	-	-	-	A
	5A	-	-	-	A
	6A	-	-	-	A
Comments: -	No water quantity management problems exist or are anticipated. River flows are regulated by Ontario Hydro and Quebec Hydro.				
2HM					
Eastern Lake Ontario Tributaries					
1. Napanee River	6A, 3A 6B, 5A	No problems	-	-	A
Comments: -	The Napanee Conservation Authority regulates river flows for recreation and low flow augmentation. Strathcona Paper utilizes the assimilation capacity of the river. The Strathcona discharge is regulated to the river flows.				
2. Millhaven Creek	5A	8	2	3A	B
	4A	No problems	-	1	A
	4B	" "	-	1	A
	6A	" "	-	1	A
	6B	" "	-	1	A
Comments: -	The Cataraqui Conservation Authority regulates the flow for recreation, municipal water supply and assimilation augmentation. Discharges from two ponds in the Township of Ernestown have resulted in interference with downstream water takings and waste assimilation. A water management plan is required and is being pursued.				

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HL					
Moira River	5A	No problems	-	-	A
	4B, 1-1a	4	4	3	F
	4B	No problems	-	-	A

Comments: - Water well interference has occurred in the past at the Village of Madoc and could happen again because a new production well is being installed. The Village has made arrangements to supply water to affected private well owners.

2HE					
Prince Edward County Streams	1A-3	6-P	2, 1-b	1, 3-C	B

Comments: - Many large cash cropping farms in Prince Edward County rely heavily on small streams and stream ponds for irrigation water. Interference complaints arise occasionally. It is suspected that water taking frequently occurs without permit or in excess of authorized limits. A major effort would be required to identify all takings and to formulate a fair sharing formula.

SOUTHEASTERN REGION (continued)

WATERSHED NAME (NUMBER)	MAJOR WATER USES	EXISTING OR POTENTIAL PROBLEMS WITH MAJOR WATER USES	ENVIRONMENTAL EFFECTS	MAIN IMPACTS	STATUS OF WATER MANAGEMENT EFFORTS
2HD Lake Ontario Tributaries (Mayhew Creek)	1A-2a	3-P	2, 1-c	3-B, 1	A-2 & 8
	3A-2a	4-P	2, 1-c	3-B, 1	A-2 & 8
	4A-2a, 1a	4-P	1-e	1, 5 (potential water shortage)	A-2 & 8
	5A-2a	8-P	2, 7	1, 3-B, C,D	H

Comments: - Mayhew Creek is a small stream with a limited base flow and intense competition between recreational, industrial, agricultural and municipal water users. At present, the users are sharing water in accordance with an agreement formulated by the Region. An extended drought would require careful monitoring.

SURFACE AND GROUNDWATER QUANTITY EVALUATION SUMMARY

The chart below summarizes the number of the 144 tertiary watersheds in the Province with major impacts resulting from excessive water withdrawals. Individual watersheds may be affected by more than one impact.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of watersheds with limitations on additional water use	16	22	15	19
No. of watersheds with damage or alteration to special or unique features resulting from low flows	2	10	2	11
No. of watersheds having interference with water withdrawals	17	24	16	22
No. of watersheds having interference with in-stream water uses	5	11	5	19
No. of watersheds with other impacts	4	7	4	7

APPENDIX I

INVENTORY OF INDUSTRIAL FACILITIES CURRENTLY SUBJECT TO MBR APPRAISAL

A. PULP AND PAPER MILLS

Northwest

Abitibi-Price - Fort William
Abitibi-Price - Thunder Bay
Abitibi-Price Provincial - Thunder Bay
Boise-Cascade - Fort Frances
Boise-Cascade - Kenora
Domtar - Red Rock
Great Lakes Forest Products - Thunder Bay
Great Lakes Paper - Dryden
James River Marathon Ltd. - Marathon
Kimberly-Clark - Terrace Bay

Northeast

Abitibi-Price - Iroquois Falls
Eddy Forest Products Ltd. - Espanola
MacMillan Bloedel Ltd. - Sturgeon Falls
Spruce Falls Power and Paper - Kapuskasing
St. Mary's Paper Inc. - Sault Ste. Marie
Waferboard Corporation - Smooth Rock Falls

West Central

Beaver Wood Fibre Co. Ltd. - Thorold
Domtar Construction Ltd. - Thorold
Domtar Fine Papers Ltd. - St. Catharines
Fraser Inc. - Thorold
Kimberly-Clark - St. Catharines
Ontario Paper Corporation - Thorold

Central

Kimberly-Clark - Huntsville

Southeast

Domtar Chemicals (Wood Preserving) - Trenton
Domtar Inc. - Cornwall
Domtar Packaging - Trenton
E. B. Eddy Forest Products - Ottawa
Strathcona Paper - Camden East Twp.
Trent Valley Paper - Sidney Twp.

B. IRON AND STEEL MILLS

Northeast

Algoma Ore Division - Wawa
Algoma Steel - Sault Ste. Marie

West Central

Atlas Steel - Welland
Canada Alloy Castings - Kitchener
Dofasco Inc. - Hamilton
Slater Steel (Burlington Steel Div.) - Hamilton
Stelco - Hamilton
Stelco Inc. - Lake Erie Works - Nanticoke

Central

Lake Ontario Steel (Lasco) - Whitby
St. Marys Cement - Bowmanville

Southeast

Ivoco - L'Original

C. PETROLEUM REFINERIES

Southwest

Esso Petroleum - Sarnia
Petrosar - Corunna
Shell Oil - Corunna
Sunoco - Sarnia

West Central

Texaco - Nanticoke

PETROLEUM REFINERIES (Continued)

Central

Petro Canada Inc. - Clarkson
Petrocan Products Inc. - Oakville

D. METAL MINES

Northwest

Campbell Red Lake Mines - Golden Twp.
Dickenson - Sullivan Venture Mines - Golden Twp.
Hemlo Gold Mine (Noranda) - Marathon
Inco - Lower Shebandowan Lake
Mattabi Mines Ltd. - Ignace
Noranda Gelo Mines - Manitouwadge
Teck - Corona Hemlo - Marathon

Northeast

Agnico (Eagle Mines) - Cobalt
Denison Mines - Elliot Lake
Detour Lake Mine - Cochrane
Dome Mines - Timmins Area
Falconbridge - Onaping
Falconbridge - Strathcona Mines
Inco - Copper Cliff Creek Plant
- Crean Hill
- Garson Mine
- Levack
- Nolin Creek Plant
Kerr Addison Mines - Virginiatown
Kidd Creek Mine - Timmins
Lac Minerals - Kirkland Lake
Nouamin Res. (Canada Ka Division) - Cobalt
Pamour Porcupine Mines (Noranda) - Timmins Area

METAL MINES (Continued)

Pamour Porcupine Mines (Schumacher Division) - Timmins Area
Rio Algom (Panel Mine) - Elliot Lake
Rio Algom (Quirice Mine) - Elliot Lake
Rio Algom (Stanleigh) - Elliot Lake
Sherman Mines - near Temagami

E. NON-FERROUS SMELTERS

Northeast

Agnico (Eagle Mines) - Cobalt
Falconbridge - Sudbury
Inco (Iron Ore Reduction Plant) - Sudbury
Inco (Nickel Refinery) - Sudbury
Kidd Creek - Timmins

West Central

Inco - Port Colborne

Central

Eldorado Resources Ltd. - Port Hope

Southeast

Chromasco - Haley Station

F. CEMENT MANUFACTURERS

Southwest

Canada Cement Lafarge - Zorra Twp.
Federal White Cement - Zorra Twp.
St. Mary's Cement - St. Mary's

CEMENT MANUFACTURERS (Continued)

Central

St. Lawrence Cement - Mississauga
St. Mary's Cement - Bowmanville

Southeast

Canada Cement Lafarge - Bath
Lake Ontario Cement - Sophiasburgh Twp.

G. FOSSIL FUELLED THERMAL GENERATING STATIONS

Northwest

Atikokan G.S. - Atikokan
Thunder Bay G.S. - Thunder Bay

Southwest

Lambton G.S. - Sarnia

West Central

Nanticoke G.S. - Nanticoke

Central

Lakeview G.S. - Mississauga

H. FISH PRODUCTS

Southwest

Erieau Packers Ltd. - Erieau
McLeon Bros. Fisheries - Wheatley
Omstead Foods Ltd. - Wheatley

Southeast

Lake Ontario Foods - South Fredricksburg

I. PLASTICS AND SYNTHETIC RESINS

Southwest

DuPont of Canada Ltd. - Corunna

West Central

Bakelite Thermosets Ltd. - Belleville
B.F. Goodrich - Niagara Falls
Canadian Oxy Durez - Fort Erie
Polysar Ltd. (Kayson Plastics Div.) - Cambridge

Southeast

Celanese Canada Inc. - Ernestown Twp

J. INDUSTRIAL CHEMICALS

Northwest

Reichold Chemicals - Thunder Bay

Northeast

Inco Ltd. (Sulphur Products Dept., IORP)
- Sudbury

Southwest

Allied Chemical Canada Ltd. - Anderdon Twp.
Cabot Carbon of Canada Ltd. - Sarnia
Chinook Chemical - Sombra Twp.
C.I.L., Agricultural Chem. Division - Lambton
Dome Petroleum - Sarnia
Dow Chemical of Canada Ltd. - Sarnia
Esso Chemical Ltd. - Sarnia
Ethyl Corp. - Corunna
Polysar Ltd. - Sarnia

INDUSTRIAL CHEMICALS (Continued)

Union Carbide (N-70 Gas Products Plant) - Sarnia
Welland Chemical Ltd. - Sarnia

West Central

Columbian Chemicals Canada Ltd. - Hamilton
Cyanamid Welland Plant - Niagara Falls
Sulco Chemical Ltd. - Elmira
Uniroyal Chemical Ltd. - Elmira

Southeast

Alcan Ltd. - Ottawa
BASF Canada Ltd. - Cornwall
B.C.L. of Canada Ltd. - Cornwall
C.I.L. - Cornwall
Cornwall Chemicals Ltd. - Cornwall
Courtaulds Ltd. - Cornwall
Domtar Chemicals - Trenton
Dupont - Maitland
Dussex Campbell Ltd. - Belleville
Nitrochem Inc. - Maitland

K. ABRASIVES

West Central

Exolon Co. of Canada Ltd. - Thorold
General Abrasives (Carpenter Works)
- Niagara Falls
Norton Co. - Niagara Falls
SOHIO - Niagara Falls
Washington Mills - Niagara Falls

Southeast

Unicorn Abrasives of Canada Ltd. - Brockville

L. METAL STAMPING, PRESSING AND COATING

Southwest

Carnation Inc. - Aylmer
Corrugated Pipe Co. Ltd. - Stratford
Jones Manufacturing Co. Ltd. - Stratford
Leigh Metal Products Ltd. - London

West Central

American Can Canada Inc. - Hamilton
Brute Mfg. Ltd. - Cambridge
Butler Metal Products Co. Ltd. - Cambridge
Canada Tool Co. Ltd. - Cambridge
Echlin Canada Ltd. - Niagara Falls
Electrohome Ltd. - Kitchener
Excell Stamping - Guelph
G.S.W. Inc. - Hamilton
Jacmore Manufacturing Ltd. - Kitchener
Pano Cap (Canada) Ltd. - Kitchener
Preston Metal & Roofing Prod. Ltd. - Cambridge

Central

Agway Metals Inc. - Mississauga
Ajax Precision Manufacturing Ltd. - North York
Alcan Canada Products - Toronto
Alcan Canada Products Ltd. (Algoods) - Scarborough
Esselite Pendaflex Canada Ltd. - Mississauga
F & K Manufacturing Co. Ltd. - North York
Gaylord Regethermic Canada Ltd. - Mississauga
Indal Limited - Mississauga
Kaiser Aluminum & Chemical Canada Inc. - Mississauga
Premier Metal Industries Ltd. - Mississauga
Samuel Strapping Systems Ltd. - Mississauga

METAL STAMPING, PRESSING AND COATING (Continued)

Southeast

Beach Industries Ltd. - Smiths Falls
Ideal Roofing Co. Ltd. - Ottawa
Koppers International Canada Ltd. - Ottawa
Rideau Aluminium & Steel Ltd. - Ottawa
Royal Canadian Mint - Ottawa
Selkirk Metalbestos - Brockville
Stelco Inc. - Gananoque

M. LIME MANUFACTURING

Southwest

Allied Chemical Canada Ltd. - Anderdon Twp
BeachviLime Ltd. - Beachville
Stelco Inc. (Chemical Lime Works) - Beachville

West Central

BeachviLime Ltd. (Guelph Dolime Ltd.) - Guelph
Steetley Industries Ltd. - Hamilton

N. MEAT PROCESSING

West Central

Comfort and Tylee Ltd. - St. Anns
Hoffman Meats Ltd. - Kitchener
Ontario Rendering Co. Ltd. - Dundas
Star Brand Packers - Binbrook

O. POULTRY PROCESSING

Southwest

Beatty Farms Ltd. - Thamesford
Cuddy Food Products Ltd. - London

West Central

J.M. Schneider - Ayr
Multifoods Ltd. - Dundas
Tend-R-Fresh - Petersburgh

Central

Maple Lodge Farms Ltd. - Norval

P. AUTOMOBILE MANUFACTURING

Southwest

Ford Motor Co. of Canada Ltd. - St. Thomas

West Central

General Motors of Canada Ltd. - St. Catharines

Central

Ford Motor Co. of Canada Ltd. - Oakville

Q. MISCELLANEOUS

Southwest

Domtar Chemical Group - Goderich

MISCELLANEOUS (Continued)

Central

Abex Industries Ltd. - Lindsay
Borg Warner Chemicals - Cobourg
Domtar Chemical Group - Orillia
Echlin Canada Ltd. - Peterborough
Fittings (Foundry) - Oshawa
Mitsubishi - Midland
Thane Dev. Ltd. - Keswick

Southeast

Black and Decker - Brockville

APPENDIX J

MBR EVALUATION OF INDUSTRIAL FACILITIES

SECTOR: **IRON AND STEEL MILLS**

S.I.C. No: 291

	1979	1980	1981	1982
No. of Facilities:	22	23	23	23
Capacity:	----------	Not Available	----------	
Production:				
Pig Iron (Million Mg)	10.9	10.9	9.7	8.0
Steel ingots (Million Mg)	15.9	15.7	14.6	11.8
Estimated Capital Expenditure for Environmental Protection ($ Millions)	0.8(Air) 15.4(Water)	43.2(Air) 14.7(Water)	38.5(Air) 53.9(Water)	4.9(Air) 3.0(Water)

Notes: No. of Facilities: Figures prior to 1984 from Statistics Canada Catalogue 41-203 (Annual)
Production: Figures prior to 1984 from Statistics Canada Catalogue 41-001 (Monthly). of Ontario, and the majority of steel ingot production is in Ontario.
Estimated Capital Expenditures: Applications for Certificates of Approval, Environmental Approvals and

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates	29 (7)*	30 (9)	25 (9)	22 (7)
Sulphur Dioxide	32 (7)	444 (11)	564 (9)	290 (7)
Nitrogen Oxides				
Noise				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand	13 (6)	9.3 (6)	11 (7)	7.9 (7)
Suspended Solids	90 (7)	45 (7)	55 (7)	34 (7)
Ether Solubles	6.3 (7)	6.4 (7)	5.9 (7)	1.9 (7)
Phenols	0.45 (6)	0.41 (6)	0.42 (7)	0.28 (7)
Ammonia	11 (5)	12 (6)	7.7 (5)	6.0 (6)
Cyanide	2.8 (5)	1.1 (6)	0.73 (5)	0.27 (6)
Heavy Metals	22 (7)	13 (7)	11 (7)	13 (7)
Phosphorus				
Chromium				
Cadmium				
Dissolved Iron				

* Numbers in brackets represent the number of facilities contributing to measured emissions/discharges.

1983	1984	1985	1986
23	23	23	23
---------- Not Available ----------			
8.6	9.6	9.6	9.2
12.7	14.6	14.5	13.8
.02 (Air)	N/A	N/A	N/A
20.2 (water)	N/A	N/A	N/A

"Iron and Steel Mills".
Although the figures reported are national totals, there are no known producers of pig iron outside

Land Use Planning Branch, Ministry of the Environment.

1983		1984		1985		1986 Planned		1986 Actual	
22	(9)	24	(7)	11	(6)	12	(7)	16	(9)
356	(6)	552	(1)	469	(6)	519	(7)	314	(7)
N/A		9.5	(1)	27	(3)	9.4	(1)	28	(4)
9.0	(7)	8.9	(3)	3.3	(4)	0.6	(3)	N/A	
37	(7)	41	(6)	37	(6)	39	(6)	40	(6)
3.1	(6)	5.4	(5)	5.0	(5)	6.8	(5)	6.8	(5)
0.19	(4)	0.16	(5)	0.14	(5)	0.14	(5)	0.16	(4)
4.8	(5)	5.2	(4)	4.7	(4)	4.8	(4)	4.5	(3)
0.27	(5)	0.26	(4)	0.14	(4)	0.14	(4)	0.18	(4)
12	(9)	15	(6)	10	(6)	10	(6)	8.2	(6)
N/A		0.0009	(2)	N/A		0.0009	(2)	N/A	
N/A		0.001	(1)	N/A		0.001	(1)	N/A	
N/A		0.00004	(1)	N/A		0.00004	(1)	N/A	
						N/A		0.18	(3)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 23
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 10
No. of Facilities with a direct discharge to a watercourse in 1986 : 7
No. of Facilities with air emissions in 1986 : 11

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	9	8	1	0
Sulphur Dioxide	9	9	0	0
Nitrogen Oxides	1	1	0	0
Noise	6	6	0	0
Oxygen Demand	3	3	0	0
Suspended Solids	6	5	1	0
Ether Solubles	5	4	1	0
Phenols	5	5	0	0
Ammonia	4	4	0	0
Cyanide	4	3	0	1
Heavy Metals	6	6	0	0
Phosphorus	2	2	0	0
Chromium	1	1	0	0
Cadmium	1	1	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
9	4	5	0
7	2	4	1
4	2	2	0
3	1	2	0
N/A	N/A	N/A	N/A
6	1	3	2
5	4	1	0
4	2	2	0
3	2	0	1
4	3	0	1
6	3	1	2
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Abatement Measures for Non-complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives or criteria.

SECTOR: **PULP AND PAPER MILLS**

S.I.C. No: 271

	1979	1980	1981	1982
No. of Facilities:	37	36	36	36
Capacity:	---------- Not Available ----------			
Production:				
Woodpulp (Million Mg)	4.3	4.4	4.4	3.8
Basic paper and paper boards (Million Mg)	3.5	3.2	3.5	3.2
Estimated Capital Expenditure for Environmental Protection ($ Millions)	1.4(Air) 43.9(Water)	6.6(Air) 25.2(Water)	11.7(Air) 34.5(Water)	11.5(Air) 19.8(Water)

Notes: No. of Facilities and Production: Figures from Statistics Canada Catalogue 36-204 (Annual) "Pulp and

Estimated Capital Expenditures: From Applications for Certificates of Approval, Environmental Approvals

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates		57 (28)	79 (24)	64 (21)
Sulphur Dioxide			8.0 (3)	49 (18)
Total Reduced Sulphur				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand	779 (28)	728 (28)	723 (28)	661 (28)
Suspended Solids	248 (28)	199 (28)	170 (28)	125 (28)
Toxicity				N/A
Bacteria				
Phosphorus				

1983	1984	1985	1986
35	35	35	35
---------- Not Available ----------			
4.2 (est.)		N/A	N/A
3.4 (est.)		N/A	N/A
6.3 (Air)		N/A	N/A
0.4 (Water)		N/A	N/A

Paper Mills".

and Land Use Planning Branch, Ministry of the Environment.

1983		1984		1985		1986 Planned		1986 Actual	
55	(13)	35	(10)	15	(9)	35	(10)	30	(11)
38	(8)	32	(6)	10	(6)	32	(7)	9.4	(9)
7.1	(1)	0.5	(1)	0.9	(2)	0.3	(1)	1.2	(10)
439	(27)	377	(27)	317	(26)	353	(27)	N/A	
114	(26)	99	(28)	97	(26)	94	(20)	62	(26)
N/A		N/A		N/A		N/A		62	(21)
N/A		N/A		N/A		N/A		88	(14)
N/A		N/A		2.5	(10)	0.1	(1)	N/A	
								16	(12)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 35
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 28
No. of Facilities with a direct discharge to a watercourse in 1986 : 27
No. of Facilities with air emissions in 1986 : 21

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	30	25	1	4
Sulphur Dioxide	25	23	0	2
Total Reduced Sulphur	2	2	0	0
Oxygen Demand	25	20	4	1
Suspended Solids	28	24	2	2
Toxicity	25	11	11	3
Bacteria	5	3	2	0
Phosphorus	1	1	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
13	9	3	1
8	7	1	1
10	8	1	1
26	21	4	0
21	18	3	0
21	10	11	0
10	5	5	0
12	9	3	0

Abatement Measures for Non-Complying Facilities

- St. Mary's Paper - Sault Ste. Marie has no present abatement program for oxygen demand, suspended solids, bacteria, phosphorus and toxicity.
- Kimberly-Clark - Terrace Bay has no present abatement programs for toxicity.
- Control Orders or other abatement programs are in effect for all other facilities not in compliance with objectives or criteria.

SECTOR: **PETROLEUM REFINING**

S.I.C. No: 365

	1979	1980	1981	1982
No. of Facilities:	11	11	10	10
Capacity:	---------- Not Available ----------			
Production: (Million m^3 crude oil)	35.4	34.5	32.8	28.8
Estimated Capital Expenditure for Environmental Protection ($ Millions)	0.0(Air) 0.5(Water)	3.7(Air) 5.0(Water)	2.1(Air) 30.3(Water)	4.4(Air) 10.1(Water)

Notes: No. of Facilities: Figures from Statistics Canada Catalogue 45-205 (Annual)
Production: Figures from Statistics Canada Catalogue 45-004 (Monthly)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Environmental Approvals expenditures in addition to refineries.

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates	16 (9)	15 (9)	14 (8)	14 (8)
Sulphur Dioxide	206 (9)	204 (9)	221 (8)	173 (8)
Hydrocarbons				
Nitrogen Oxides				
Direct Discharges to Watercourses (Mg/day):				
Suspended Solids	3.8 (9)	3.9 (9)	3.0 (8)	1.4 (8)
Ether Solubles	1.6 (9)	1.3 (9)	0.58 (8)	1.2 (8)
Phenols	0.05(9)	0.05(9)	0.03 (8)	0.009 (8)
Toxicity			N/A	N/A
Ammonia				

1983	1984	1985	1986
10	10	10	10
---------- Not Available ----------			
29.3	31.3	30.3	26.0
10.1 (Air) 6.4 (Water)	N/A N/A	N/A N/A	N/A N/A

and, Land Use Planning Branch, Ministry of the Environment. Figures include petrochemical

1983		1984		1985		1986 Planned		1986 Actual	
12	(7)	15	(7)	12	(7)	3.1	(3)	13	(7)
166	(6)	183	(7)	158	(7)	36	(3)	157	(7)
N/A		2.7	(4)	2.3	(4)	N/A		2.29	(5)
N/A		36	(4)	38	(5)	N/A		38	(5)
0.57	(6)	0.91	(7)	1.3	(7)	0.79	(7)	1.53	(7)
0.32	(7)	0.52	(7)	0.60	(7)	0.48	(7)	0.374	(7)
0.003	(7)	0.004	(7)	0.004	(7)	0.003	(7)	0.001	(7)
N/A		N/A		N/A		N/A		0.0	(5)
N/A		0.111	(4)	0.17	(7)	0.0069	(3)	0.164	(7)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 10
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 8
No. of Facilities with a direct discharge to a watercourse in 1986 : 7
No. of Facilities with air emissions in 1986 : 7

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	7	3	0	4
Sulphur Dioxide	7	3	0	4
Hydrocarbons	N/A	N/A	N/A	N/A
Nitrogen Oxides	N/A	N/A	N/A	N/A
Suspended Solids	7	7	0	0
Ether Solubles	7	7	0	0
Phenols	7	6	1	0
Toxicity	7	7	0	0
Ammonia	4	4	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
7	7	0	0
7	7	0	0
5	5	0	0
5	5	0	0
7	7	0	0
7	7	0	0
7	6	1	0
5	5	0	0
7	7	0	0

Abatement Measures for Non-complying Facilities

- Control Orders or other abatement programs are in effect for all facilities ~~in~~ non-compliance with objectives or criteria.

SECTOR: **CEMENT MANUFACTURING**

S.I.C. No: 352

	1979	1980	1981	1982
No. of Facilities:	8	9	7	7
Capacity:(Million Mg/Year)	--------- Not Available ----------			
Production:(Million Mg)	3.9	3.4	3.6	2.8
Estimated Capital Expenditure for Environmental Protection ($ Millions)	------- No Figures Available -------			

Notes: No. of Facilities: Figures prior to 1983 from Statistics Canada Catalogue 44-204 (Annual)
Production: Figures prior to 1983 from Statistics Canada Catalogue 26-202 (Annual)

EMISSIONS	1979		1980		1981		1982	
Air Emissions (Mg/day):								
Particulates	29	(8)	17	(7)	17	(6)	14	(6)
Sulphur Dioxide	21	(8)	22	(7)	19	(6)	11	(6)
Direct Discharges to Watercourses (Mg/day):								

1983	1984	1985	1986
7	7	7	7
6.3	6.3	N/A	N/A
2.9	3.1	4.1	N/A
N/A	N/A	N/A	N/A

1983		1984		1985	1986 Planned		1986 Actual	
9.8	(6)	6.1	(4)	N/A	5.1	(4)	1.55	(4)
12	(6)	7.9	(4)	N/A	7.9	(4)	1.64	(3)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 7
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 7
No. of Facilities with a direct discharge to a watercourse in 1986 : 3
No. of Facilities with air emissions in 1986 : 7

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	6	4	2	0
Sulphur Dioxide	6	6	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
4	4	0	0
3	3	0	0

Abatement Measures for Non-Complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with criteria.

SECTOR: **METAL MINES**

S.I.C. No: 051, 052, 057, 058, 159

	1979	1980	1981	1982
No. of Facilities:	38	40	35	27
Capacity:	-------- Not Available ----------			
Production:				
Precious Metals - Gold, Silver, Platinum (Million kg)	0.45	0.48	0.36	0.36
Cu, Ni, Pb, Zn (" ")	564.57	661.9	604.3	498.8
Iron Ore (Million Kg)	8.2	6.5	5.3	3.8
Uranium (Million Kg)	4.42	4.3	4.7	5.0
Estimated Capital Expenditure for Environmental Protection ($ Millions)	See Notes concerning Smelting and Refining Sector.			

Notes: No. of Facilities & Production: Figures from Statistics Canada Catalogue 26-202 (Annual)

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates			N/A	4.0 (2)
Sulphur Dioxide			N/A	N/A
Direct Discharges to Watercourses (Mg/day)				
Cyanide	0.04 (6)	0.09 (7)	0.12 (7)	0.13 (7)
Heavy Metals	1.6 (30)	1.6 (31)	0.83 (25)	0.85 (25)
Suspended Solids	14 (30)	7.2 (32)	4.3 (24)	4.5 (25)
Ammonia			1.4 (2)	2.9 (3)
Arsenic				

1983	1984	1985	1986
27	24	N/A	N/A
---------- Not Available ----------			
0.35	0.50	0.48	0.47
489.7	732.0	691.04	736.3
3.7	3.8	4.5	3.4
4.8	4.3	4.5	4.5

1983	1984	1985	1986 Planned	1986 Actual
0.007 (1)	N/A	N/A	N/A	0.0 (1)
18.0 (1)	N/A	N/A	N/A	19 (1)
0.24 (6)	0.28 (6)	0.22 (6)	0.046 (4)	1.17 (9)
0.50 (15)	0.38 (21)	0.28 (18)	0.27 (18)	1.44 (26)
3.6 (17)	4.8 (23)	3.0 (20)	5.2 (19)	10 (26)
N/A	1.9 (4)	2.7 (13)	2.1 (4)	3.3 (17)
N/A	0.04 (3)	0.04 (9)	0.002 (1)	0.14 (15)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : Not Available
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 24
No. of Facilities with a direct discharge to a watercourse in 1986 : 28*
No. of Facilities with air emissions in 1986 : 5*

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	N/A	N/A	N/A	N/A
Sulphur Dioxide	N/A	N/A	N/A	N/A
Cyanide	6	2	0	4
Heavy Metals	20	10	1	9
Suspended Solids	22	9	0	13
Ammonia	4	2	0	2
Arsenic	2	0	1	1

* Dickenson and Campbell Red Lake Mines (Balmertown) are assessed jointly.

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
1	1	0	0
1	1	0	0
9	3	3	3
26	21	2	3
26	23	2	1
17	11	0	5
15	12	1	3

Abatement Measures for Non-Complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives.

SECTOR: **THERMAL GENERATING STATIONS**

	1979	1980	1981	1982
No. of Facilities:	7	7	7	7
Capacity: MW (Dec.Dep.Peak)*	11,488	10,167	10,421	1,013
Production: GWh	33,043	32,802	33,833	36,483
Estimated Operating Expenditure for Environmental Protection** ($ Millions)	2.6	4.5	4.8	N/A

Notes: No. of Facilities and Production: Figures from Ontario Hydro report entitled Estimates of Atmospheric

Capacity: Figures prior to 1982 from Ontario Hydro report entitled Power Resource

EMISSIONS	1979	1980	1981	1982	
Air Emissions (Mg/day):					
Particulates	23	23	23	22	(7)
Sulphur Dioxide	1197	1085	1145	1233	(7)
Nitrogen Oxide	169	180	195	222	(7)
Direct Discharges to Watercourses (Mg/day):	---------- Not Available ----------				

* December Dependable Peak.

** Capital expenditure figures are not available. Instead, estimates have been provided for increased operating expenditures associated with pollution abatement efforts.

1983	1984	1985	1986
6	5	N/A	N/A
8,277	N/A	N/A	N/A
37,264	39,421	N/A	N/A
2.7	N/A	N/A	N/A

Emissions from Ontario Hydro (Annual).

Report (1981). Mothballed units are not included.

1983		1984		1985		1986 Planned		1986 Actual	
23	(6)	23	(5)	19	(5)	15	(5)	17	(5)
1199	(6)	1217	(5)	922	(5)	785	(5)	766	(5)
324	(6)	313	(5)	259	(5)	189	(5)	124	(4)
---------- Not Available ----------									

No. of Facilities in Ontario in 1986 based on Statistics Canada data : N/A
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 5
No. of Facilities with a direct discharge to a watercourse in 1986 : N/A
No. of Facilities with air emissions in 1986 : 5

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	5	5	0	0
Sulphur Dioxide	5	5	0	0
Nitrogen Oxides	5	5	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
5	4	0	1
5	4	0	1
4	4	0	0

SECTOR: **NON-FERROUS SMELTING AND REFINING**

S.I.C. No: 295

	1979	1980	1981	1982
No. of Facilities:	11	11	12	12
Capacity:	---------- Not Available ----------			
Production:				
Estimated Capital Expenditure for Environmental Protection ($ Millions)	4.6(Air) 1.2(Water)	5.7(Air) 3.7(Water)	10.6(Air) 57.5(Water	3.1(Air) 28.7(Water)

Notes: No. of Facilities: Figures prior to 1983 from Statistics Canada Catalogue 41-214 (Annual)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Environmental Approvals Estimated Capital Expenditures include Mining expenditures and

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates	37 (4)	36 (6)	36 (8)	34 (7)
Sulphur Dioxide	1366 (5)	2543 (8)	2503 (8)	2235 (8)
Nitrogen Oxides				
Fluorides			0 (1)	N/A
Nitric Acid				
Uranium			0 (1)	N/A
Ammonia				
Direct Discharges to Watercourses (Mg/day):				
Heavy Metals			0.09 (3)	0.03 (3)
Suspended Solids			0.19 (2)	0.23 (2)
Ammonia			1.4 (1)	1.1 (1)
Radium 226			N/A	N/A
Arsenic				
Fluorides				
Nitrates				
Uranium				

1983	1984	1985	1986
12	12	12	12
N/A	N/A	N/A	N/A
---------- Not Available ----------			
761.4 (Air)*	N/A	N/A	N/A
6.5 (Water)	N/A	N/A	N/A

and Land Use Planning Branch, Ministry of the Environment.
therefore do not coincide precisely with S.I.C. 295.

1983		1984		1985		1986 Planned		1986 Actual	
38	(7)	83	(6)	37	(5)	91	(6)	217	(6)
2127	(6)	2123	(6)	2143	(6)	2432	(6)	2344	(6)
N/A		N/A		N/A		N/A		N/A	
N/A		N/A		0.004	(1)	0.15	(1)	0.004	(1)
N/A		N/A		N/A		N/A		N/A	
N/A		0.08	(1)	0.06	(1)	0.05	(1)	N/A	
N/A		N/A		N/A		N/A		N/A	
0.05	(1)	0.05	(3)	0.03	(3)	0.05	(3)	0.026	(4)
0.50	(1)	0.61	(2)	0.33	(2)	0.74	(2)	0.182	(3)
N/A		0.11	(1)	N/A		0.1	(1)	0.004	(2)
N/A		N/A		N/A		N/A		N/A	
N/A		0.002	(1)	0.002	(1)	0.002	(1)	0.00002	(1)
N/A		0.29	(1)	N/A		0.3	(1)	N/A	
N/A		1.6	(1)	N/A		1.2	(1)	N/A	
N/A		0.03	(1)	N/A		0.05	(1)	N/A	

* Total includes $755 million spent on construction at Eldorado Nuclear, Blind River.

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 12
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 8
No. of Facilities with a direct discharge to a watercourse in 1986 : 4
No. of Facilities with air emissions in 1986 : 7

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	7	6	0	1
Sulphur Dioxide	6	6	0	0
Nitrogen Oxides	1	1	0	0
Fluorides	1	1	0	0
Nitric Acid	1	1	0	0
Uranium	1	1	0	0
Ammonia	1	1	0	0
Heavy Metals	3	3	0	0
Suspended Solids	2	2	0	0
Ammonia	1	1	0	0
Radium 226	1	0	0	1
Arsenic	1	0	0	0
Fluorides	1	0	0	0
Nitrates	1	0	0	0
Uranium	1	0	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
6	5	1	0
6	5	1	0
3	3	0	0
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0
4	4	0	0
3	3	0	0
2	2	0	0
N/A	N/A	N/A	N/A
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0

SECTOR: **FISH PRODUCTS INDUSTRY**

S.I.C. No: 102

	1979	1980	1981	1982
No. of Facilities:	15	15	15	7
Capacity:	---------- Not Available ----------			
Production:				
Value of Shipments ($ Million)	27	28	28	N/A
Estimated Capital Expenditure for Environmental Protection ($Millions)	Expenditures Are Not Significant			

Notes: No. of Facilities: Figures prior to 1983 from Statistics Canada Catalogue 32-216.

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):	No Significant Air Emissions			
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand	1.0 (2)	1.0 (3)	1.0 (3)	0.17 (4)
Suspended Solids	1.0 (2)	1.0 (3)	1.0 (3)	0.15 (4)

1983	1984	1985	1986
7	1	N/A	N/A
---------- Not Available ----------			
N/A	N/A	N/A	N/A

1983		1984		1985		1986 Planned		1986 Actual
0.28	(3)	0.30	(3)	0.04	(1)	0.07	(3)	N/A
0.37	(3)	0.22	(3)	0.07	(1)	0.07	(3)	N/A

No. of Facilities in Ontario in 1986 based on Statistics Canada data : Not Available
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 4
No. of Facilities with a direct discharge to a watercourse in 1986 : 3
No. of Facilities with air emissions in 1986 : 1

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Oxygen Demand	3	3	0	0
Suspended Solids	3	3	0	0
Odours	0	0	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
1	1	0	0
1	1	0	0
1	0	1	0

SECTOR: **PLASTICS AND SYNTHETIC RESINS**

S.I.C. No: 373

	1979	1980	1981	1982
No. of Facilities:	34	33	33	33
Capacity:	---------- Data Incomplete ----------			
Production: Value of Shipments ($ Millions)		617.7	N/A	N/A
Estimated Capital Expenditure for Environmental Protection ($Millions)	Expenditures included in expenditures for "Petroleum Refining and Petrochemicals" and for "Industrial Chemicals".			

Notes: No. of Facilities and Production: Figures prior to 1981 from Statistics Canada Catalogue 46-211 (Annual)

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates				0.28 (3)
Sulphur Dioxide				1.4 (4)
Nitrogen Oxides				1.0 (4)
Hydrocarbons				0.11 (2)
Formaldehyde				
Odours				
Carbon Monoxide				
Direct Discharges to Watercourses (Mg/day):				
Suspended Solids				0.76 (3)
Phenols				0.0001 (2)
Phosphorus				0.0007 (2)
Oxygen Demand				0.001 (2)
Vinyl Chloride				

1983	1984	1985	1986
33	33	N/A	N/A
---------- Data Incomplete ----------			
N/A	N/A	N/A	N/A

"Manufacturing of Plastics and Synthetic Resins".

1983	1984	1985	1986 Planned	1986 Actual
0.17 (2)	0.07 (1)	0.08 (1)	N/A	0.08 (1)
1.2 (3)	0.11 (2)	0.15 (1)	N/A	0.15 (1)
7.9 (4)	0.6 (1)	0.62 (1)	N/A	0.62 (1)
0.10 (2)	0.57 (1)	0.10 (1)	N/A	0.1 (1)
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
0.003 (1)	0.02 (2)	0.25 (3)	0.03 (2)	0.225 (3)
N/A	0.009 (2)	0.0008 (3)	0.009 (2)	0.00017 (2)
N/A	0.001 (2)	0.0004 (2)	0.0007 (3)	0.00091 (3)
0.01 (1)	0.78 (3)	0.71 (3)	0.58 (3)	0.34 (4)
N/A	0.001 (1)	0.0002 (1)	0.0002 (1)	0.00008 (1)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : Not Available
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 9
No. of Facilities with a direct discharge to a watercourse in 1986 : 5
No. of Facilities with air emissions in 1986 : 6

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	N/A	N/A	N/A	N/A
Sulphur Dioxide	2	1	0	1
Nitrogen Oxides	N/A	N/A	N/A	N/A
Hydrocarbons	N/A	N/A	N/A	N/A
Formaldehyde	1	0	1	0
Odours	1	0	0	1
Carbon Monoxide	N/A	N/A	N/A	N/A
Suspended Solids	2	2	0	0
Phenols	2	1	1	0
Phosphorus	2	2	0	0
Oxygen Demand	3	3	0	0
Vinyl Chloride	1	1	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0
2	1	1	0
1	0	0	1
3	2	1	0
2	1	1	0
3	3	0	0
4	2	2	0
1	1	0	0

Abatement Measures for Non-Complying Facilities

- Control Orders or other abatement programs are in effect for all facilities not in compliance with objectives or criteria.

SECTOR: **INDUSTRIAL CHEMICALS**

S.I.C. No: 378

	1979	1980	1981	1982
No. of Facilities:	63	62	62	62
Capacity:	---------- Data Incomplete ----------			
Production: Value of Shipments ($ Millions)		2,619.4	N/A	N/A
Estimated Capital Expenditure for Environmental Protection ($ Millions)		5.3(Air) 3.4(Water)	6.0(Air) 7.4(Water)	4.8(Air) 0.3(Water)

Notes: No. of Facilities and Production: Figures prior to 1981 from Statistics Canada Catalogue 46-219 (Annual)

Estimated Capital Expenditures: From Applications for Certificates of Approval, Environmental Approvals Estimated Capital Expenditures include all Chemical expenditures and

EMISSIONS	1979	1980	1981	1982	
Air Emissions (Mg/day):					
Particulates				2.5	(7)
Sulphur Dioxide				33	(7)
Nitrogen Oxides				31	(7)
Hydrocarbons				0.2	(5)
Vinyl Chloride					
Mercury					
Phtalic Anhydride					
Lead					
Direct Discharges to Watercourses (Mg/day):					
Oxygen Demand				6.7	(5)
Suspended Solids				12	(10)
Heavy Metals				0.51	(2)
Phenols				0.01	(3)
Total Organic Carbon				9.3	(3)
Ammonia				0.35	(1)
Nitrogen					
Chlorides					
Phosphorus					
Sulphuric Acid					
Solvent Extractables					
Dissolved Solids					
Fluorides					
Nitrates					

1983	1984	1985	1986
62	62	62	62
---------- Data Incomplete ----------			
N/A	N/A	N/A	N/A
3.4 (Air)	N/A	N/A	N/A
0.7 (Water)	N/A	N/A	N/A

"Manufacturing of Industrial Chemicals".

and Land Use Planning Branch, Ministry of the Environment.
therefore do not coincide precisely with S.I.C. 378.

1983		1984		1985		1986 Planned		1986 Actual	
2.4	(5)	2.5	(9)	1.0	(7)	0.05	(1)	0.995	(13)
16	(5)	10	(6)	8.5	(5)	0.82	(1)	8.5	(14)
23	(6)	22	(8)	9.2	(6)	N/A		12	(13)
2.2	(5)	2.7	(8)	1.6	(6)	N/A		1.6	(12)
N/A		0.1	(1)	N/A		N/A		N/A	
N/A		0.001	(1)	0.0001	(1)	N/A		0.00019	(1)
N/A		0.02	(1)	0.02	(1)	0.001	(1)	0.019	(1)
N/A		0.03	(1)	N/A		0.02	(1)	N/A	
3.0	(2)	9.6	(6)	9.0	(6)	3.0	(3)	7.3	(5)
12	(9)	12	(13)	8.3	(10)	3.7	(11)	4.7	(10)
0.09	(4)	0.29	(6)	0.29	(6)	0.27	(6)	0.002	(1)
0.01	(3)	0.005	(4)	0.01	(4)	0.004	(3)	0.0063	(5)
6.2	(2)	3.8	(5)	2.4	(5)	3.6	(4)	2.6	(5)
1.8	(2)	0.7	(4)	1.3	(6)	0.6	(4)	0.877	(5)
19	(2)	9.8	(3)	3.5	(2)	3.7	(3)	3.4	(2)
320	(1)	822	(1)	730	(2)	850	(1)	702	(2)
N/A		0.05	(3)	0.05	(4)	0.04	(3)	0.052	(4)
N/A		16	(2)	13	(2)	12	(2)	9.9	(2)
N/A		0.07	(2)	0.07	(2)	0.07	(2)	0.058	(2)
N/A		1.8	(1)	4.9	(3)	1.8	(1)	5.6	(1)
N/A		0.04	(1)	0.11	(2)	0.04	(2)	0.05	(1)
				1.4	(2)	N/A		1.598	(2)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 62
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 26
No. of Facilities with a direct discharge to a watercourse in 1986 : 21
No. of Facilities with air emissions in 1986 : 23

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	2	9	0	1
Sulphur Dioxide	2	7	0	0
Nitrogen Oxides	N/A	7	0	0
Hydrocarbons	N/A	13	0	4
Mercury	1	1	0	0
Phtalic Anhydride	1	1	0	0
Lead	1	1	0	0
Amine	1	1	0	0
Napthenic Acid	1	1	0	0
Oxygen Demand	4	3	1	0
Sulphuric Acid	1	1	0	0
Suspended Solids	11	10	0	1
Heavy Metals	6	6	0	0
Phenols	4	4	0	0
Total Organic Carbon	4	4	0	0
Ammonia	4	4	0	0
Nitrogen	3	2	1	0
Chlorides	1	1	0	0
Solvent Extractables	2	2	0	0
Dissolved Solids	1	1	0	0
Fluorides	1	1	0	0
Phosphorus	3	3	0	0
Sulphuric Acid	2	2	0	0
Nitrates	N/A	N/A	N/A	N/A
Chromium	N/A	N/A	N/A	N/A
Total Nitorgen	N/A	N/A	N/A	N/A
Zinc	N/A	N/A	N/A	N/A
Pentachlorophenol	N/A	N/A	N/A	N/A

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
13	13	0	0
13	13	0	0
12	11	1	0
11	11	0	0
1	1	0	0
1	1	0	0
2	2	0	0
1	1	0	0
1	1	0	0
5	4	1	0
10	9	1	0
1	1	0	0
5	4	1	0
1	1	0	0
5	5	0	0
2	1	1	0
2	2	0	0
2	2	0	0
1	1	0	0
1	1	0	0
4	4	0	0
2	2	0	0
2	1	1	0
1	1	0	0
2	1	1	0
1	1	0	0
1	1	0	0

Abatement Measures for Non-Complying Facilities

- Reichhold Chemicals - Thunder Bay has no present abatement program for suspended solids.
- Control Orders or other abatement programs are in effect for all other facilities not in compliance with objectives or criteria.

SECTOR: **ABRASIVES**

S.I.C. No: 291

	1979	1980	1981	1982
No. of Facilities:		20	20	20
Capacity:	---------- data incomplete ----------			
Production: Value of Shipments ($ Million)		158.6	N/A	N/A
Estimated Capital Expenditure for Environmental Protection ($ Millions)	---------- Not Available ----------			

Notes: No. of Facilities and Production: Figures prior to 1981 from Statistics Canada Catalogue 44-202 (Annual)

EMISSIONS	1979	1980	1981	1982	
Air Emissions (Mg/day):					
Particulates				1.0	(1)
Sulphur Dioxide				12	(2)
Hydrogen Sulphide				1.1	(1)
Noise					
Dust					
Urea Formaldehyde					
Furfural, Phenols, Formaldehyde					
Odours					
Direct Discharges to Watercourses (Mg/Day):					
Oxygen Demand				0.06	(2)
Suspended Solids				3.3	(2)
Phosphorus				0.02	(2)
Phenols					
Solvent Extractables					

1983	1984	1985	1986
20	20	20	20
---------- Data Incomplete ----------			
166.5	198.6	N/A	N/A
---------- Not Available ----------			

"Abrasives Manufacturing".

1983	1984	1985	1986 Planned	1986 Actual
2.3 (3)	1.3 (2)	1.3 (2)	1.3 (2)	5 (5)
2.0 (2)	1.0 (1)	N/A	1.0 (1)	5 (5)
1.1 (1)	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	0.002 (1)	N/A	0.002 (1)	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	0.05 (2)	N/A	0.119 (1)
0.54 (2)	0.3 (2)	0.74 (3)	0.3 (2)	0.315 (4)
N/A	0.001 (1)	0.0001 (1)	0.001 (1)	0.006 (1)
N/A	N/A	N/A	N/A	N/A
				0.163 (3)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 20
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 6
No. of Facilities with a direct discharge to a watercourse in 1986 : 5
No. of Facilities with air emissions in 1986 : 5

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	5	2	2	1
Sulphur Dioxide	3	1	2	0
Dust	1	1	0	0
Odours	1	1	0	0
Noise	1	1	0	0
Hydrogen Sulphide	4	3	0	1
Urea Formaldehyde	1	1	0	0
Furfural, Phenols Formaldehyde	1	1	0	0
Oxygen Demand	1	1	0	0
Suspended Solids	3	3	0	0
Phosphorus	1	1	0	0
Phenols	1	1	0	0
Solvent Extractables	N/A	N/A	N/A	N/A

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
5	5	0	0
5	5	0	0
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
5	0	0	5
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
1	1	0	0
4	4	0	0
1	1	0	0
N/A	N/A	N/A	N/A
3	3	0	0

SECTOR: **METAL STAMPING, PRESSING, AND COATING INDUSTRIES**

S.I.C. No: 3042

	1979	1980	1981	1982
No. of Facilities:		116	116	124
Capacity:		--------- Not Available ---------		
Production:				
Value of Shipments ($ Millions)		1,740.4	1,719.9	1,540.8
Estimated Capital Expenditure for Environmental Protection ($ Millions)				

Notes: No. of Facilities: Figures from Statistics Canada Catalogue 41-227 (Annual).

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Noise	---------- No Data Available ----------			
Vibration	---------- No Data Available ----------			

1983	1984	1985	1986
124	124	116	N/A
---------- Not Available ----------			

1983	1984	1985	1986 Planned	1986 Actual
---------- Not Available ----------				
---------- Not Available ----------				

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 116
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 42
No. of Facilities with a direct discharge to a watercourse in 1986 : N/A
No. of Facilities with air emissions in 1986 : 33

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Noise	38	35	0	3
Vibration	38	36	0	2

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
17	16	1	0
22	19	3	0

Abatement Measures for Non-Complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives.

SECTOR: **LIME MANUFACTURING**

S.I.C. No: 358

	1979	1980	1981	1982
No. of Facilities:	N/A	6	6	6
Capacity:	---------- Not Available ----------			
Production: Value of Shipments ($ Millions)		67.1	76.2	69.7
Estimated Capital Expenditure for Environmental Protection ($ Millions)	---------- Not Available ----------			

Notes: No. of Facilities and Production: Figures prior to 1983 from Statistics Canada Catalogue 44-220.

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates				
Direct Discharges to Watercourses (Mg/day):				

1983	1984	1985	1986
6	6	6	6
76.0 (est.)	81.4	78.5	N/A
---------- Not Available ----------			

1983		1984		1985		1986 Planned		1986 Actual
5.4	(2)	20	(4)	17	(3)	13	(4)	0
No Significant Discharges								

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 6
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 5
No. of Facilities with a direct discharge to a watercourse in 1986 : N/A
No. of Facilities with air emissions in 1986 : 6

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	6	3	3	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
2	0	2	0

Abatement Measures for Non-Complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with criteria.

SECTOR: **AUTOMOBILE MANUFACTURING**

S.I.C. No:

	1979	1980	1981	1982
No. of Facilities:				
Capacity:	---------- Not Available ----------			
Production:				
Estimated Capital Expenditure for Environmental Protection ($ Millions)				

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Particulates				
Sulphur Dioxide				
Total Reduced Sulphur				
Nitrogen Oxides				
Odours				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand				
Suspended Solids				
Solvent Extractables				
Phenols				
Phosphorus				
Carbon Oxygen Demand				

* Numbers in brackets represent the number of facilities contributing to total emissions/discharges.

1983	1984	1985	1986
		N/A	N/A
	---------- Not Available ----------		
		N/A	N/A
		N/A	N/A

1983	1984	1985	1986 Planned	1986 Actual
N/A	1.1 (1)	N/A	1.2 (1)	N/A
N/A	1.2 (1)	N/A	1.3 (1)	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	0.94 (3)	0.58 (3)	2.3 (3)	0.702 (2)
N/A	1.8 (3)	2.1 (3)	2.2 (2)	1.872 (3)
N/A	0.08 (2)	0.06 (3)	2.0 (2)	0.08 (3)
N/A	0.012 (3)	0.02 (3)	0.012 (2)	0.0147 (3)
N/A	0.005 (2)	0.01 (3)	0.13 (2)	0.136 (3)
		0.237 (1)	N/A	N/A

No. of Facilities in Ontario in 1986 based on Statistics Canada data : N/A
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 4
No. of Facilities with a direct discharge to a watercourse in 1986 : 3
No. of Facilities with air emissions in 1986 : 3

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Particulates	2	2	0	0
Sulphur Dioxide	2	2	0	0
Total Reduced Sulphur	1	1	0	0
Nitrogen Oxides	1	1	0	0
Odours	N/A	N/A	N/A	N/A
Oxygen Demand	2	1	1	0
Suspended Solids	2	2	0	0
Solvent Extractables	2	2	0	0
Phenols	2	1	1	0
Phosphorus	2	2	0	0
Carbon Oxygen Demand	N/A	N/A	N/A	N/A

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
2	2	0	0
1	1	0	0
1	1	0	0
N/A	N/A	N/A	N/A
1	1	0	0
N/A	N/A	N/A	N/A
3	2	1	0
3	3	0	0
3	1	2	0
3	3	0	0
2	1	1	0

Abatement Measures for Non-complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives or criteria.

SECTOR: **POULTRY PROCESSING**

S.I.C. No:

	1979	1980	1981	1982
No. of Facilities:		34	35	36
Capacity:	---------- Not Available ----------			
Production:				
Estimated Capital Expenditure for Environmental Protection ($ Millions)				

Notes:

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Odours				
Ammonia				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand				
Suspended Solids				
Total Kieldahl Nitrogen				
Phosphorus				
Ammonia				

* Numbers in brackets represent the number of facilities contributing to total emissions/discharges.

1983	1984	1985	1986
30	32	N/A	N/A
---------- Not Available ----------			

1983	1984	1985	1986 Planned	1986 Actual
N/A	N/A	N/A	N/A	N/A
		N/A	N/A	N/A
N/A	0.29 (5)	0.37 (5)	0.09 (5)	0.039 (4)
N/A	0.27 (5)	0.36 (5)	0.12 (5)	0.07 (4)
N/A	0.013 (5)	0.04 (3)	0.09 (5)	0.005 (3)
N/A	0.032 (1)	0.02 (5)	0.004 (1)	0.005 (4)
N/A	0.02 (1)	0.03 (3)	0.003 (1)	0.009 (3)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : N/A
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 6
No. of Facilities with a direct discharge to a watercourse in 1986 : 4
No. of Facilities with air emissions in 1986 : 2

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Odours	2	0	0	2
Ammonia	N/A	N/A	N/A	N/A
Oxygen Demand	5	5	0	0
Suspended Solids	5	5	0	0
Total Kieldahl Nitrogen	1	1	0	0
Phosphorus	5	4	1	0
Ammonia	1	1	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
1	1	0	0
3	3	0	0
4	4	0	0
4	1	3	0
3	1	0	2
4	2	2	0
3	3	0	0

Abatement Measures for Non-complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives or criteria.

SECTOR: **MEAT PROCESSING**

S.I.C. No:

	1979	1980	1981	1982
No. of Facilities:		189	181	174
Capacity:	---------- Not Available ----------			
Production:				
Estimated Capital Expenditure for Environmental Protection ($ Millions)				

Notes:

EMISSIONS	1979	1980	1981	1982
Air Emissions (Mg/day):				
Odours				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand				
Suspended Solids				
Phosphorus				

* Numbers in brackets represent the number of facilities contributing to total emissions/discharges.

1983	1984	1985	1986
179	195	N/A	N/A
---------- Not Available ----------			

1983	1984	1985	1986 Planned	1986 Actual
N/A	(30)	N/A	N/A	N/A
N/A	0.013 (1)	0.02 (1)	0.007 (1)	0.014 (1)
N/A	0.009 (1)	0.005 (1)	0.005 (1)	0.011 (1)
N/A	0.004 (1)	0.002 (1)	0.002 (1)	0.004 (1)

No. of Facilities in Ontario in 1986 based on Statistics Canada data : 23
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 4
No. of Facilities with a direct discharge to a watercourse in 1986 : 2
No. of Facilities with air emissions in 1986 : 3

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Odours	30	25	0	5
Oxygen Demand	2	2	0	0
Suspended Solids	2	2	0	0
Phosphorus	1	1	0	0

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
2	0	2	0
1	0	1	0
1	1	0	0
1	1	0	0

Abatement Measures for Non-complying Facilities

- Control Orders or other abatement programs are in effect for all facilities in non-compliance with objectives or criteria.

SECTOR: **MISCELLANEOUS MANUFACTURING**

S.I.C. No:

	1979	1980	1981	1982
No. of Facilities:				
Capacity:	---------- Not Available ----------			
Production:				
Estimated Capital Expenditure for Environmental Protection ($ Millions)				
Notes:				
EMISSIONS	**1979**	**1980**	**1981**	**1982**
Air Emissions (Mg/day):				
Particulates				
Fluorides				
Hydrocarbons				
Sulphur Dioxide				
Nitrogen Oxides				
Aluminum				
Asbestos				
Direct Discharges to Watercourses (Mg/day):				
Oxygen Demand				
Suspended Solids				
Phosphorus				
Phenols				
Ammonia				
Fluorides				
Chromium				
Dissolved Solids				

* Numbers in brackets represent the number of facilities contributing to total emissions/discharges.

1983	1984	1985	1986
23	23	23	23
---------- Not Available ----------			
8.6	9.8 (est.)	N/A	N/A
12.7	15.2 (est.)	N/A	N/A
0.02 (Air)	N/A	N/A	N/A
20.2 (Water)	N/A	N/A	N/A

1983	1984	1985	1986 Planned	1986 Actual
N/A	1.35 (3)	6.6 (1)	0.25 (1)	3 (1)
			N/A	14 (1)
N/A	0.25 (3)	N/A	N/A	N/A
N/A	0.14 (2)	N/A	N/A	N/A
N/A	0.27 (3)	N/A	N/A	N/A
			N/A	0.84 (1)
N/A	0.08 (2)	0.08 (2)	0.08 (2)	N/A
N/A	0.026 (2)	1.0 (2)	0.025 (2)	0.034 (2)
N/A	0.09 (3)	2.5 (3)	0.11 (3)	0.159 (1)
N/A	0.04 (2)	0.01 (2)	0.05 (2)	0.0086 (2)
N/A	0.0002 (1)	N/A	0.00015 (1)	N/A
N/A	0.005 (1)	0.08 (1)	0.006 (1)	N/A
N/A	0.005 (1)	0.003 (1)	0.004 (1)	0.0043 (1)
N/A	0.00007 (1)	0.00007 (1)	0.0002 (1)	0.0002 (1)
				32 (1)

No. of Facilities in Ontario in 1986 based on Statistics Canada Data : 23
Corrected No. of Facilities used for MBR evaluation (listed in Appendix I) : 7
No. of Facilities with a direct discharge to a watercourse in 1986 : 5
No. of Facilities with air emissions in 1986 : 4

Contaminant	No. of Assessable Facilities	FORECAST 1986 COMPLIANCE		
		No. of Facilities which were Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Expected to be Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Not Forecast
Aluminium	N/A	N/A	N/A	N/A
Particulates	2	0	0	2
Asbestos	2	2	0	0
Fluoride	1	0	0	1
Oxygen Demand	2	1	0	1
Suspended Solids	2	1	0	1
Phosphorus	1	1	0	0
Ammonia	1	1	0	0
Chromium	N/A	N/A	N/A	N/A
Dissolved Solids	N/A	N/A	N/A	N/A
Chloride	N/A	N/A	N/A	N/A

No. of Assessable Facilities	ACTUAL 1986 COMPLIANCE		
	No. of Facilities which were Substantially in Compliance with Environmental Objectives	No. of Facilities which were NOT Substantially in Compliance with Environmental Objectives	No. of Facilities where Compliance was Unknown
1	1	0	0
1	1	0	0
1	1	0	0
1	1	0	0
2	1	0	0
2	0	1	1
2	1	0	1
1	1	0	0
1	0	0	1
1	1	0	0
1	0	0	1

Abatement Measures for Non-complying Facilities

- Fiberglass Ltd. - Sarnia has no present abatement program for particulates.
- Control Orders or other abatement programs are in effect for all other facilities in non-compliance with objectives or criteria.

APPENDIX K

AIR QUALITY EVALUATION BY GEOGRAPHICAL LOCATION

AIR QUALITY EVALUATION BY GEOGRAPHICAL LOCATION

The air quality at all locations in Ontario with long term sampling stations is presented in the tables following the table of Ambient Air Quality Criteria.

The following items explain the column headings used in the evaluation tables.

Column 1: Classification of Station Locations

The location of each monitoring station has been classified as being source oriented, commercial, residential, urban or rural (or a combination of these).

Column 2: Number of Stations

The number of sampling stations used for monitoring at each geographic location.

Column 3: Range of Annual Averages

For each geographic location, the minimum to maximum range of annual averages monitored at all stations is shown. When only one monitoring station has been sampled at a particular location, its annual average concentration is recorded. Units of measurement for each parameter are indicated in the table of Ambient Air Quality Criteria.

Column 4-8: The Annual Criteria, 1-Month Criteria, 8-Hour Criteria and 1-Hour Criteria given in the table of Ambient Air Quality Criteria.

Column 5-8: % Data Above Criterion

In addition to the numerical percentages, these columns record the actual number of exceedences (x) and the total number of sampling periods (y) in the format (x/y). All the data are for the 1986 calendar year.

Column 9: Major Sources of Pollution

The major factors influencing data values at each station are provided in this column. The interpretation for each code number is as follows:

1 ... Generating Station
2 ... Iron and Steel
3 ... Non-Ferrous Metals
4 ... Forest Products, Pulp and Paper
5 ... Petrochemical
6 ... Non-Metallic Mineral Production (cement, quarries, etc.)
7 ... Grain Elevators
8 ... Miscellaneous Manufacturing
9 ... Other Industrial Sources
10 ... Space Heating
11 ... Incineration
12 ... Agriculture
13 ... Fugitive Sources
14 ... Photochemical Reactions in the Atmosphere
15 ... Natural
16 ... General Urban
17 ... Construction
18 ... Unknown
19 ... Vehicular Transportation
20 ... Long Range Transport or Transboundary

Column 10: 1986 Planned Results

The planned 1986 results are presented for purposes of comparison with the 1986 Actual Results.

AMBIENT AIR QUALITY CRITERIA*

The table below presents ambient air quality criteria for the monitored parameters.

	Annual	1-Month	24-Hour	8-Hour	1-Hour
Sulphur Dioxide	0.02 ppm		0.10 ppm		0.25 ppm
Nitrogen Dioxide			0.10 ppm		0.20 ppm
Carbon Monoxide				13 ppm	30 ppm
Soiling Index	0.5 COH/1000 ft		1.0 COH/1000 ft		
Ozone					0.08 ppm
Dustfall	4.5 g/m^2/30 days	7.0 g/m^2/30 days			
Total Reduced Sulphur					27 ppb
Lead in Suspended Particulate Matter			5.0 ug/m^3		
Total Suspended Particulate Matter	60 ug/m^3 (geometric mean)		120 ug/m^3		
Fluorides		40 ug/100 cm^2 of limed filter paper			

* Ontario Regulation 873/74 under the Environmental Protection Act.

AIR QUALITY EVALUATION BY GEOGRAPHIC LOCATION

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
ALLISTON										
Ozone	Rural	1	.024					0.1 (7) / (8719)	14, 20	No significant change from 1985
AMHERSTBURG										
Total Suspended Particulate Matter	Industrial/ Residential	1	39	0		0 (0) / (44)			9	No significant change from 1985
Localized Problem(s):	Quarrying and manufacturing operations at Allied Chemical lead to complaints about particulates emission. Fluorides and chlorides emissions from Allied have been reduced resulting in improved impacts on vegetation. Further abatement in progress.									
ATIKOKAN										
Total Suspended Particulate Matter	Commercial	1	21	0		0 (0) / (55)			1	No significant change from 1985
AURORA										
Dustfall	Commercial/ Residential	1	5.2	1	20.0 (2) / (10)				8,19	No significant change from 1985
AYR										
Dustfall	Source oriented (Date Industries)	1	18.2	1	75.0 (9) / (12)				2	Significant improvement over 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
BALMERTOWN										
Sulphur Dioxide	Source Oriented	1	.008	0		.6 (2) / (355)		.9 (79) / (8527)	3	No significant change from 1985
Localized Problem(s):	Sulphur dioxide from Campbell Red Lake Mines Ltd. is causing odours and vegetation damage occasionally resulting in complaints and reduced production of agricultural crops, lumber and/or ornamental shrubs. Company has implemented a voluntary emission reduction program during the growing season (May-September).									
BARRIE										
Sulphur Dioxide	Commercial/ Residential	1	.002	0		0 (0) / (363)		0 (0) / (8717)	8,10,20	No significant change from 1985
Total Suspended Particulate Matter	Commercial/ Residential	1	35	0		1.1 (1) / (89)			8, 7,19	" "
Dustfall	Commercial/ Residential	1	1.8	0	0 (0) / (8)				8,13,16	" "
BEACHVILLE										
Total Suspended Particulate Matter	Rural/ Industrial	3	52-71	2		12.5 (27) / (216)			6,13,19	No significant change from 1985
Localized Problem(s):	Particulate matter is causing property corrosion and soiling resulting in complaints, concern among local citizens, and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Control Orders are now in place for Beachvilime plants 1 and 2 and Stelco lime facilities, as well as Canada Cement Lafarge and Federal White Cement.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
BELLEVILLE										
Total Suspended Particulate Matter	Urban	1	53	0		3.9 (2)/(51)			16	No significant change from 1985
Lead in Suspended Particulate Matter				Discontinued						
BLACKWATER										
Dustfall	Source Oriented	3	9.0-35.4	3	66.7 (16)/(24)				6	New station, 1986
BLIND RIVER										
Total Suspended Particulate Matter	Residential/ Commercial/ Source Oriented	1	23	0		0 (0)/(53)			9	No significant change from 1985
BOWMANVILLE										
Dustfall	Industrial/ Residential	2	3.9-6.1	1	9.1 (1)/(11)				8	No significant change from 1985
	Source Oriented	2	5.1-7.2	2	41.2 (7)/(17)				6	New station, 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
BRAMPTON										
Total Suspended Particulate Matter	Residential/ Industrial	1	59	0		11.5 (6)/(52)			8,19	No significant change from 1985
Dustfall	Industrial/ Residential	1	3.6	0	0 (0)/(10)				8,19	" "
Fluorides	Source Oriented	7	42-944		60.7 (34)/(56)				6	" "
BRANTFORD										
Dustfall	Source Oriented (Bell City)	1	4.8	1	8.3 (1)/(12)				2	No significant change from 1985
	Source Oriented (Massey Ferguson)	2	5.5	1	12.5 (3)/(24)				2	" "
BRUCE TWP.										
Sulphur Dioxide	Rural	1	.001	0	-----	0 (0)/(361)		0 (0)/(8649)	1	No significant change from 1985
Total Reduced Sulphur	Rural	1	.0001		-----				1	" "
Ozone	Rural	1	.028					.4 (31)/(8547)	14,20	" "
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber and/or ornamental shrubs. Additional regulatory programs/policies are required.									

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
BURLINGTON										
Sulphur Dioxide	Residential	1	.004	0		0 (0)/(352)		0 (0)/(8413)	2, 8,10, 20	No significant change from 1985
Nitrogen Dioxide	Residential	1	.021			0 (0)/(283)		.01 (1)/(6796)	19,20	" "
Carbon Monoxide	Residential	1	1.1				0 (0)/(6744)	0 (0)/(6744)	19	" "
Ozone	Residential	1	.020					0.6 (46)/(7956)	14,20	" "
Dustfall	Residential	1	3.2	0	11.1 (1)/(9)				8,13,19	" "
	Source Oriented	3	3.1-3.5	0	3.8 (1)/(26)				2	
Total Suspended Particulate Matter	Residential	1	45	0		0.9 (1)/(117)			8,19	" "
Fluorides	Source Oriented	3	26-127		60.0 (9)/(15)				6	" "
Localized Problem(s):	Amines are causing odours resulting in complaints in the vicinity of S.W. Fearman meat packing plant. Kish emission from the steel plants in Hamilton causes complaints and reduced recreational use of property. Abatement is required to meet existing standards, guidelines or criteria. Monitoring is underway around Canada Brick for potential vegetation damage caused by fluoride emissions.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
CHATHAM										
Total Suspended Particulate Matter	Commercial	1	45	0		0 (0)/(53)			8,16,19	No significant change from 1985
CHIPPAWA										
Total Suspended Particulate Matter	Source Oriented	1	62	1		5.1 (3)/(59)			8,15	No significant change from 1985
Sulphur Dioxide	Source Oriented	1	.006	0		0 (0)/(365)		0 (0)/(8612)	8	" "
Total Reduced Sulphur	Source Oriented	1	2.1					0.5 (39)/(7706)	8	" "
Dustfall	Source Oriented (Norton, all of above)	2	3.3-8.2	1	26.1 (6)/(23)				8,16	" "
Localized Problem(s):	Total suspended particulate matter, dustfall, and total reduced sulphur are causing odours and nuisance effects resulting in complaints, reduced recreational use and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. A tall stack has recently been installed. The effects are being monitored.									
COBALT										
Total Suspended Particulate Matter	Residential	Monitoring Discontinued 1985								No significant change from 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
COLLINGWOOD										
Dustfall	Commercial/ Residential	1	5.7	1	30.0 (3)/(10)				8,19	No significant change from 1985
	Rural	1	3.3	0	0 (0)/(9)				8	" "
CORNWALL										
Sulphur Dioxide	Residential	1	.006	0		0 (0)/(359)		0 (0)/(8255)	4	No significant change from 1985
Nitrogen Dioxide	Residential	1	.011			0 (0)/(360)		0 (0)/(8153)	19,20	" "
Ozone	Residential	1	.023					.2 (16)/(8489)	14,20	" "
Total Reduced Sulphur	Source Oriented	1	3.1					.1 (8)/(5837)	4	" "
	Residential	1	2.6					1.5 (123)/(8505)	4	Expected to deteriorate from 1985
	Source Oriented	1	7.3					8.4 (607)/(7256)	4, 8	New station, 1986
Total Suspended Particulate Matter	Residential	1	42	0		0 (0)/(42)			16	No significant change from 1985
	Commercial	1	49	0		2.1 (1)/(47)			16	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
CORNWALL (cont'd)										
Lead in Suspended Particulate Matter	Residential	1	2.0			0 (0)/(42)			19	No significant change from 1985
Soiling Index	Residential	1	.10	0		0 (0)/(328)		0.2 (14)/(7243)	16,19	" "
Carbon Monoxide	Residential	1	1.1				0 (0)/(1054)	0 (0)/(8264)	16,19	" "
Localized Problem(s):	Long range transport of ozone and mercury from the local chlor-alkali plant are causing concern among local citizens and may be affecting agriculture. Additional regulatory programs/policies are required for ozone. Reduced sulphur compounds continue to exceed criteria on a frequent basis. Further abatement is required.									
DRYDEN										
Total Reduced Sulphur	Source Oriented	1	1.0					0.2 (12)/(8168)	4	No significant change from 1985
Localized Problem(s):	Total reduced sulphur from Great Lakes Forest Products Ltd. is causing odours resulting in concern among local citizens and reduced recreational use. Enforcement is planned or underway.									
EAST YORK										
Fluorides	Source Oriented	3	31-679		70.8 (17)/(24)				6	No significant change from 1985
Total Suspended Particulate Matter	Source Oriented	1	58	0		5.9 (12)/(202)			3	New station, 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
ELK LAKE										
Dustfall	Industrial/ Residential	2	3.8-10.7	1	27.3 (6) / (22)				4	No significant change from 1985
Localized Problem(s)	Dustfall from forest products industry is causing concern among local citizens. Enforcement is planned.									
ELLIOT LAKE										
Total Suspended Particulate Matter	Monitoring Program Discontinued									No significant change from 1985
ENGLEHART										
Dustfall	Industrial/ Residential/ Rural	4	2.1-2.3	1	5.1 (2) / (39)				4	No significant change from 1985
Localized Problem(s)	Dustfall from forest products/pulp and paper industry is causing concern among local citizens. Abatement is required to meet existing standards, guidelines or criteria.									
ESPANOLA										
Total Suspended Particulate Matter	Industrial/ Residential	1	43	0		3.6 (2) / (56)			4,10	No siginficant change from 1985
Dustfall	Industrial	3	1.7-7.2	0	0 (0) / (30)					" "
Total Reduced Sulphur	Industrial/ Residential	1	1.1	N/A				.3 (4) / (1380)	4	" "
Localized Problem(s)	Reduced sulphur and dustfall from E.B. Eddy pulp and paper mill are causing odours and aesthetic effects, resulting in complaints, reduced recreational use of property and increased cleaning, maintenance and repairs of buildings and/or other objects. Abatement is required to meet existing standards, guidelines or criteria. Mobile monitoring survey to be conducted by Air Resources Branch in August 1986 to document changes resulting from modernization program.									

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
ETOBICOKE										
Sulphur Dioxide	Residential	2	.002 - .005	0		0 (0)/(556)		0 (0)/(13399)	1, 8,10, 20	No significant change from 1985
	Industrial	2	.004 - .005	0		0 (0)/(629)		0 (0)/(14873)	1, 8,10, 20	" "
Nitrogen Dioxide	Residential	1	.027			0 (0)/(345)		0 (0)/(8222)	14,19,20	" "
	Industrial	1	.032			0 (0)/(352)		.04 (3)/(8333)	14,19,20	" "
Carbon Monoxide	Residential	1	1.2				0 (0)/(7605)	0 (0)/(7605)	19	" "
	Industrial	1	1.4				0 (0)/(8095)	0 (0)/(8095)	19	" "
Soiling Index	Industrial	1	.54	1		2.7 (8)/(301)			8,16,19	" "
Dustfall	Residential	7	2.8-6.6	3	15.5 (9)/(58)				8,16,19	" "
	Industrial	4	4.3-6.0	2	13.9 (5)/(36)				8,16,19	" "
	Source Oriented	3	5.3-8.2	3	34.6 (9)/(26)				9	" "
Ozone	Residential	1	.019					1.1 (75)/(7028)	14,20	" "
	Industrial	1	.013					0.3 (28)/(8291)	14,20	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
ETOBICOKE (cont'd)										
Lead in Suspended Particulate Matter	Residential	1	.2			0 (0)/(98)			19	No significant change from 1985
	Industrial	2	.2-.3			0 (0)/(328)			3,19	" "
Total Suspended Particulate Matter	Residential	2	50-63	1		5.4 (23)/(423)			8,17,19	" "
	Industrial	3	52-61	1		3.4 (16)/(475)			8,19	" "
FORT ERIE										
Sulphur Dioxide	Rural	Monitoring Discontinued 1986								
FORT FRANCES										
Dustfall	Source Oriented	3	2.6-14.1	2	58.8 (20)/(34)				4,13	No significant change from 1985
Total Reduced Sulphur	Source Oriented	2	1.2-3.9					2.1 (337)/(15779)	4,20	" "
Total Suspended Particulate Matter	Source Oriented	2	29-60	0		8.1 (9)/(111)			4,19	" "
Localized Problem(s):	Total reduced sulphur and dustfall from Boise Cascade Canada Ltd. are causing odours, soiling and health effects resulting in complaints, concern among local citizens, and reduced recreational use. Enforcement is planned or underway. Boise Cascade Corp., International Falls, also contributes to total reduced sulphur levels in Fort Fort Frances.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
GODERICH										
Total Suspended Particulate Matter	Residential	1	31	0		0 (0)/(58)			7,13,16	No significant change from 1985
Localized Problem(s):	Suspended particulate matter is causing nuisance effects resulting in complaints. Additional regulatory programs/ policies are required for the Goderich Elevators.									
GREENSVILLE										
Dustfall	Source Oriented (Steetley's Quarry)	6	4.1-8.2	5	33.3 (24)/(72)				6,13	Significant improvement over 1985
Total Suspended Particulate Matter	Source Oriented	1	100	1	34.2 (13)/(38)					New station, 1986
Localized Problem(s):	Dustfall is causing nuisance effects resulting in complaints, reduced recreational use and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. No further protection efforts are possible.									
GUELPH										
Total Suspended Particulate Matter	Commercial	1	34	0		0 (0)/(58)			16,19	No significant change from 1985
	Source Oriented (Dolime)	1	53	0		8.6 (5)/(58)			6	" "
Sulphur Dioxide	Commercial	1	.003	0		0 (0)/(330)		0 (0)/(8000)	10	" "
Localized Problem(s):	Suspended particulate matter from Dolime is causing nuisance effects resulting in complaints and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. As part of 1986 Control Order, Dolime is installing scrubbers in their lime kiln. Should be completed by October 1987.									

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
HAMILTON										
Sulphur Dioxide	Source Oriented	2	.008-.01	0		0 (0)/(695)		0 (0)/(16241)	2, 8,10	No significant change from 1985
Carbon Monoxide	Source Oriented	2	.3-1.1				0 (0)/(2039)	0 (0)/(16315)	2,19	" "
Nitrogen Dioxide	Source Oriented	2	.023-.027			0 (0)/(636)		0 (0)/(15136)	2, 8,10, 19	" "
Ozone	Source Oriented Industrial	1	.016					.1 (5)/(6885)	14,20	" "
Soiling Index	Source Oriented	2	.31-.57	1		4.0 (28)/(709)			2, 8, 9, 16	" "
Total Reduced Sulphur	Source Oriented	2	1.3-1.4					.2 (29)/(16771)	2, 8	Unknown
Total Suspended Particulate Matter	Source Oriented	5	73-110	5		20.5 (170)/(831)			2, 8, 9, 13,16,19	No significant change from 1985
	Commercial	4	52-70	3		8.8 (20)/(226)			2, 8, 9, 11,16,19	" "
	Residential	4	45-52	0		4.0 (9)/(226)			2, 8, 9, 16,19	" "
	Industrial	2	66-79	2		14.7 (17)/(116)			2, 8,13, 16,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
HAMILTON (cont'd)										
Lead in Suspended Particulate Matter	Source Oriented	3	.2-.3			0 (0)/(172)			19	No significant change from 1985
	Commercial	1	.2			0 (0)/(59)			19	" "
	Residential	2	.1			0 (0)/(112)			19	" "
Lead in Suspended Particulate Matter	Industrial	2	.1-.2			0 (0)/(116)			19	" "
Localized Problem(s):	Total suspended particulate matter, dustfall and sometimes total reduced sulphur are causing odours and nuisance effects and may be causing health effects. Complaints, concern among local citizens and increased costs for cleaning, maintenance and repairs of buildings and/or other objects have resulted. Major sources are under Control Orders.									
HEARST										
Dustfall	Industrial/ Residential	7	3.8-11.7	6	39.7 (23)/(58)				4	No significant change from 1985
Total Suspended Particulate Matter		1								New station, 1986
Localized Problem(s):	Dustfall from forest products industry is resulting in complaints from local citizens. Enforcement is planned or under way.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
KAPUSKASING										
Dustfall	Industrial/ Residential	4	1.9-8.1	2	30.0 (12)/(40)				4	No significant change from 1985
Localized Problem(s):	Dustfall is causing soiling resulting in increased costs for cleaning, maintenance and repairs of buildings and/or other objects as well as a minor reduction in recreational use. Enforcement is planned or under way.									
KENORA										
Dustfall	Source Oriented	2	3.1-8.9	1	27.3 (6)/(22)				4	No significant change from 1985
Sulphur Dioxide	Source Oriented	Monitoring Terminated in August 1985								
Localized Problem(s):	Dustfall from bark burning boilers at sulphite pulp mill owned by Boise Cascade Canada Ltd. is causing soiling resulting in complaints and increased costs for cleaning, maintenance and repairs of buildings and/or other objects as well as a minor reduction in recreational use. Enforcement is planned or underway.									
KINGSTON										
Ozone	Urban	1	.3					.2 (13)/(8230)	14,20	No significant change from 1985
Localized Problem(s):	Ozone from transboundary sources may be affecting agriculture. Additional regulatory programs/policies are required.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
KITCHENER										
Sulphur Dioxide	Commercial	1	.003	0		0 (0)/(319)		0 (0)/(7774)	10	No significant change from 1985
Carbon Monoxide	Commercial	1	.9				0 (0)/(970)	0 (0)/(7756)	19	" "
Nitrogen Dioxide	Commercial	1	.032			0 (0)/(340)		0 (0)/(8132)	10,19	" "
Ozone	Commercial	1	.017					.4 (33)/(8204)	14,20	" "
Total Suspended Particulate Matter	Commercial	1	56	0		3.5 (2)/(57)			16,19	" "
Lead in Suspended Particulate Matter	Commercial	1	.3			0 (0)/(57)			19	" "
Dustfall	Source Oriented (Hogg Fuel & Supply)	1	6.5	1	36.4 (4)/(11)				6,15,18	" "
Localized Problem(s):	Dustfall from Hogg Fuel and Supply is causing nuisance effects resulting in complaints and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. No protection efforts are planned. Main Kitchener station to be moved in 1987, remote from Conestoga Parkway.									
LONDON										
Sulphur Dioxide	Residential	3	.001-.003	0		0 (0)/(542)		0 (0)/(13149)	11	New station, 1986
	Urban	1	.003	0		0 (0)/(345)		0 (0)/(8133)	10	No significant change from 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
LONDON (cont'd)										
Nitrogen Dioxide	Urban	1	.03			0 (0)/(320)		0 (0)/(7538)	16,19	No significant change from 1985
Carbon Monoxide	Urban	1	.3				0 (0)/(983)	0 (0)/(7868)	16,19	" "
Soiling Index	Urban	1	.3	0		.6 (2)/(351)			8,16,19	" "
Ozone	Urban	1	.018					.2 (14)/(8352)	14,20	" "
Total Suspended Particulate Matter	Urban	2	46-49	0		1.8 (2)/(111)			8,16,19	" "
	Residential	4	35-43			0 (0)/(144)			11,16,19	New Station 1986
Lead in Suspended Particulate Matter	Urban	2	.1-.2			0 (0)/(144)			19	No significant change from 1985
	Residential	4	.1-.2			0 (0)/(144)				New Station 1986
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber, and/or ornamental shrubs. Additional regulatory programs/policies are required. Additional ambient monitoring began in 1986 in anticipation of 1987 start-up of EFW plant for Victoria Hospital.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
LONGLAC										
Dustfall	Source Oriented	1	3.8	0	0 (0)/(12)				4	No significant change from 1985
Localized Problem(s):	Smoke from wood waste burners operated by Weldwood of Canada Ltd. and Kimberly Clark of Canada Ltd. cause periodic reduced visibility and soiling effects, plus complaints from local residents. Enforcement in underway.									
MARATHON										
Total Reduced Sulphur	Source Oriented	1	0.9					1.6 (115)/(7373)	4	No significant change from 1985
Localized Problem(s):	Total reduced sulphur from James River-Marathon Ltd. is causing odours resulting in some concern among local citizens. Enforcement is planned or underway.									
MARKHAM										
Dustfall	Residential	1	2.6	0	0 (0)/(10)				8,19	No significant change from 1985
MISSISSAUGA										
Sulphur Dioxide	Residential	2	.005-.007	0		0 (0)/(708)		0 (0)/(16863)	1, 5, 8, 10,20	No significant change from 1985
Nitrogen Dioxide	Residential	1	.026			0 (0)/(283)		0 (0)/(6805)	19,20	" "
Carbon Monoxide	Residential	1	1.4				0 (0)/(8138)	0 (0)/(8138)	19	" "
Ozone	Residential	1	.012					0 (0)/(5256)	14,20	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
MISSISSAUGA (cont'd)										
Dustfall	Residential	7	3.3-7.5	2	12.3 (8)/(65)					No significant change from 1985
	Residential/ Industrial	7	3.4-5.9	1	6.7 (4)/(60)					" "
	Industrial	6	3.6-8.4	4	25.9 (14)/(54)					" "
	Source Oriented	2	3.0-3.4	0	0 (0)/(9)					" "
Lead in Suspended Particulate Matter	Residential	2	.1-.2		0 (0)/(24)	0 (0)/(144)			19	" "
	Industrial	3	.7-2.4		30.6 (11)/(36)	18.0 (174)/(964)			3,19	" "
Total Suspended Particulate Matter	Residential	2	51-53	0		2.0 (3)/(150)			8,19	" "
	Industrial	3	62-68	3		9.1 (88)/(962)			3, 8,19	" "
Fluorides	Source Oriented	8	16-512		26.3 (15)/(57)				5, 6	" "
Localized Problem(s):	Hydrocarbons, sulphur dioxide and particulates are causing odours and may be causing health effects resulting in complaints and concern among local citizens. Enforcement is planned or underway for Gulf, St. Lawrence Cement and Anachemia.									
MOORE TWP.										
Sulphur Dioxide	Rural/ Industrial	1	.004			0 (0)/(346)		0 (0)/(8243)	1, 5	No significant change from 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
MOORE TWP. (cont'd)										
Total Suspended Particulate Matter	Rural	3	33-36	0		.4 (2) / (455)			12,19	No significant change from 1985
	Residential	1	34	0		0 (0) / (57)			16,19	" "
NANTICOKE AREA										
Total Suspended Particulate Matter	Rural/ Industrial	8	30-71	1		3.7 (16) / (433)			1, 2, 9, 12,13	Insufficient data
Sulphur Dioxide	Rural/ Industrial	5	.002-.004	0		0 (0) / (1710)		.01 (3) / (37275)	1, 2, 5, 9	No significant change from 1985
Total Reduced Sulphur	Rural/ Industrial	3	.1-.8					.01 (19) / (22075)	2, 5	Insufficient data
Nitrogen Dioxide	Rural/ Industrial	3	.005-.007			0 (0) / (1005)		0 (0) / (23642)	1, 2, 5, 9	" "
Ozone	Rural	2	.028-.031					1.4 (218) / (15973)	14,20	No significant change from 1985
Dustfall	Rural/ Industrial	3	4.3-4.8	1	8.3 (3) / (36)				1, 2,13	Insufficient data
NEWCASTLE										
Dustfall	Rural	1	5.9	1	33.3 (3) / (9)				15,19	No significant change from 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
NEWMARKET										
Dustfall	Commercial/ Residential	2	4.1-4.5	0	5.0 (1)/(20)				13,19	No significant change from 1985
NIAGARA FALLS										
Soiling Index	Commercial	1	.18	0		0 (0)/(351)			8,16	No significant change from 1985
Sulphur Dioxide	Commercial	1	.003	0		0 (0)/(353)		0 (0)/(8228)	8,10	" "
	Source Oriented (General Abrasives)	1	.007	0		0 (0)/(321)		0 (0)/(7667)	8,13	" "
Total Reduced Sulphur	Source Oriented (General Abrasives)	1	1.2					.3 (22)/(7209)	8	" "
Total Suspended Particulate Matter	Commercial	1	42	0		0 (0)/(57)			16	" "
	Source Oriented (Cyanid)	1	90	1		15.5 (9)/(58)			8	Significant improvement over 1985
	Source Oriented (General Abrasives)	1	81	1		17.2 (10)/(58)			8,13	No significant change from 1985
Localized Problem(s):	Total reduced sulphur and particulates are causing odours and nuisance effects resulting in complaints. Negotiations with General Abrasives are ongoing.									

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
NORTH BAY										
Sulphur Dioxide	Residential	1	.002	0		0		0 (0)/(8227)	10	No significant change from 1985
Total Suspended Particulate Matter	Residential/ Industrial	2	30-32	0		0 (0)/(115)			10,19	
Lead in Suspended Particulate Matter	Commercial/ Residential	1	.1		0	0 (0)/(33)			19	" "
Dustfall	Commercial/ Residential/ Industrial	3	5.5-10.3	3	25 (6)/(24)				19	" "
NORTH YORK										
Sulphur Dioxide	Residential	1	.005	0		0 (0)/(235)		0 (0)/(5634)	1, 8,10, 20	No significant change from 1985
Nitrogen Dioxide	Residential	1	.023			0 (0)/(330)		0 (0)/(7935)	19,20	" "
Carbon Monoxide	Residential	1	1.3				0 (0)/(6105)	0 (0)/(6105)	19	" "
Ozone	Residential	1	.007					0 (0)/(7179)	14,20	" "
Dustfall	Residential	2	3.3-4.0	1	11.1 (2)/(18)				16,19	" "
	Commercial/ Residential	3	3.9-4.7	1	0 (0)/(30)				16,19	" "
	Industrial	1	11.6	1	80.0 (8)/(10)				8,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
NORTH YORK (cont'd)										
Lead in Suspended Particulate Matter	Residential	1	.1			0 (0)/(108)			19	No significant change from 1985
Total Suspended Particulate Matter	Residential	1	40	0		.9 (1)/(116)			8,19	" "
OAKVILLE										
Sulphur Dioxide	Residential	1	.005	0		0 (0)/(356)		0 (0)/(8404)	5, 8,10, 20	No significant change from 1985
Soiling Index	Residential	1	.30	0		.7 (2)/(292)			8,19	" "
Nitrogen Dioxide	Residential	1	.02			0 (0)/(350)		0 (4)/(8274)	5,19,20	" "
Carbon Monoxide	Residential	1	1.0				0 (0)/(8358)	0 (0)/(8358)	19	" "
Ozone	Residential	1	.017					.4 (27)/(7436)	14,20	" "
Lead in Suspended Particulate Matter	Residential	1	.1			0 (0)/(119)			19	" "
Total Suspended Particulate Matter	Residential	1	43	0		.8 (1)/(119)				" "
Total Reduced Sulphur	Residential	1	.0024					.1 (7)/(8455)	5, 8	" "
Dustfall	Residential	2	5.0-5.9	2	11.1 (2)/(18)				8,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
OAKVILLE (cont'd)										
Dustfall	Industrial/ Residential	6	3.1-8.8	4	15.7 (8)/(51)				5, 6, 8, 19	No significant change from 1985
Fluorides	Source Oriented	2	35-38		42.9 (6)/(14)				8	" "
	Industrial/ Residential	2	31-35		21.4 (3)/(14)				5, 6	" "
Localized Problem(s):	Total reduced sulphur (as hydrogen sulphide), sulphur dioxide, and hydrocarbon emissions from the Petro Canada Refinery are causing odour problems which result in complaints and reduced recreational use of property. Abatement is required to meet existing standards, guidelines or criteria. Monitoring is underway around Weatherspoon Foundry for potential excessive particulate emissions which result in complaints.									
ORILLIA										
Total Suspended Particulate Matter	Residential/ Commercial	1	40	0		1.8 (1)/(57)			7, 8, 19	No significant change from 1985
Dustfall	Commercial/ Residential	1	3.3	0	20.0 (2)/(10)				8, 19	" "
OSHAWA										
Sulphur Dioxide	Residential	1	.003	0		0 (0)/(353)		0 (0)/(8375)	8, 10, 20	No significant change from 1985
Nitrogen Dioxide	Residential	1	.021			0 (0)/(355)		0 (0)/(8428)	19, 20	" "
Carbon Monoxide	Residential	1	1.2				0 (0)/(7171)	0 (0)/(7171)	19	" "
Soiling Index	Residential	1	.33	0		.3 (1)/(343)			8, 19, 20	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
OSHAWA (cont'd)										
Ozone	Residential	1	.017					.2 (20) / (8435)	14,20	No significant change from 1985
Dustfall	Residential	5	3.2-7.7	2	16.7 (8) / (48)				2, 8,19	" "
	Source Oriented	5	3.0-15.6	3	28.9 (13) / (45)				2, 8,19	" "
Total Suspended Particulate Matter	Residential	2	43-51	0		1.3 (3) / (233)			8,19	" "
Lead in Suspended Particulate Matter	Residential	2	.1		0 (0) / (24)	0 (0) / (210)			19	" "
Localized Problem(s):	Fugitive dust is causing soiling effects resulting in complaints, concern among local citizens and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Enforcement is planned or underway for Fittings.									
OTTAWA										
Sulphur Dioxide	Commercial	1	.002	0		0 (0) / (365)		0 (0) / (8317)	16	No significant change from 1985
Nitrogen Dioxide	Commercial	1	.011			0 (0) / (360)		0 (0) / (8398)	14,19	" "
Ozone	Commercial	1	.019					0 (0) / (8397)	14,16,20	" "
Total Suspended Particulate Matter	Commercial	2	37-42	0		0 (0) / (33)			16	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
OTTAWA (cont'd)										
Lead in Suspended Particulate Matter	Commercial	1	.3			0 (0)/(36)			16,19	No significant change from 1985
Soiling Index	Commercial	1	.18	0		0 (0)/(328)			16	" "
Carbon Monoxide	Commercial	1	.6				0 (0)/(N/A)	0 (0)/(6623)	16,19	" "
Localized Problem(s):	Ozone may be affecting agriculture. Additional regulatory programs/policies are required.									
PETERBOROUGH										
Sulphur Dioxide	Commercial	1	.002	0		0 (0)/(349)		0 (0)/(8446)	8,10,20	No significant change from 1985
Lead in Suspended Particulate Matter	Commercial	1	.1		0 (0)/(12)	0 (0)/(43)			19	" "
Total Suspended Particulate Matter	Commercial	1	36	0		7.0 (4)/(57)			8	" "
Dustfall	Commercial	1	3.5	0	10.0 (1)/(10)					" "
	Residential	1	3.9	0	11.1 (1)/(9)					" "
	Industrial	1	7.9	1	44.4 (4)/(9)					" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
PETERBOROUGH (cont'd)										
Ozone	Commercial	1	.018					.2 (19) / (8019)	14,20	No significant change from 1985
PICKERING										
Total Suspended Particulate Matter	Residential	1	47	0		4.6 (12) / (260)			1, 8,19	No significant change from 1985
PLYMPTON TOWNSHIP										
Ozone	Rural	1	.024					.5 (41) / (7616)	14,20	No significant change from 1985
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber and/or ornamental shrubs. Additional regulatory programs/policies are required.									
PORT COLBORNE										
Total Suspended Particulate Matter	Source Oriented	1	52	0		3.4 (2) / (59)			3,16	No significant change from 1985
PORT HOPE										
Total Suspended Particulate Matter	Residential/ Industrial/ Commercial	3	31-35	0		.4 (1) / (267)			8,19	No significant change from 1985
Dustfall	Residential	1	3.2	0	0 (0) / (7)				13,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
PORT HOPE (cont'd)										
Dustfall	Residential/ Industrial/ Commercial	4	2.2-3.5	0	0 (0)/(28)				13,19	No significant change from 1985
Fluorides	Source Oriented	6	11-165		29.2 (14)/(48)				9	" "
	Residential	6	8-16		0 (0)/(48)				9	" "
Localized Problem(s):	Fluorides and radiation are causing vegetation damage and may be causing health effects resulting in complaints and concerns among local citizens. Abatement is required to meet existing standards, guidelines or criteria for Eldorado Nuclear.									
RALEIGH TWP.										
Ozone	Rural	1	.02					.1 (5)/(7993)	14,20	No significant change from 1985
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber, and/or ornamental shrubs. Additional regulatory program/policies are required.									
RAVENSHOE										
Dustfall	Source Oriented/Rural	3	2.9-3.8	0	0 (0)/(27)				3,19	New station, 1986
Fluorides	Source Oriented/Rural	3	8-13		0 (0)/(15)				3	" "
Localized Problem(s):	Particulate emissions from around Aluminum Dross Recycling result in complaints and apprehension among citizens. Abatement is required to meet existing standards, guidelines and criteria.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
RED ROCK										
Dustfall	Source Oriented	1	4.6	0	25.0 (3)/(12)				4	No significant change from 1985
Total Reduced Sulphur	Source Oriented	1	1.9					1.1 (87)/(8051)	4	" "
Localized Problem(s):	Total reduced sulphur and dustfall from Domtar Packaging Ltd. are causing odours and soiling, and may be causing health effects resulting in complaints, concern among local citizens, reduced recreational use and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Enforcement is planned or under way.									
RICHMOND HILL										
Dustfall	Residential	1	3.6	0	0 (0)/(10)				8,19	No significant change from 1985
ROSSLYN										
Fluorides	Source Oriented	2	11-18		4.5 (1)/(22)				6	New station 1985
Localized Problem(s):	Fluoride from tile plant owned by Great Lakes Ceramics Inc. may cause minor vegetation damage and concern from local citizens plant probably currently meets requirements of air quality for fluoride.									
ST. CATHARINES										
Sulphur Dioxide	Commercial	1	.005	0		0 (0)/(267)		0 (0)/(6230)	8,10	No significant change from 1985
Carbon Monoxide	Commercial	1	.2				0 (0)/(752)	0 (0)/(6015)	19	" "
Nitrogen Dioxide	Commercial	1	.019			0 (0)/(263)		0 (0)/(6168)	10,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
ST.CATHARINES(cont'd)										
Ozone	Commercial	1	.022					.2 (11) / (6277)	14,20	No significant change from 1985
Dustfall	Source Oriented (Aimco)	1	13.7	1	75.0 (9) / (12)				2,13	Significant improvement over 1985
	Source Oriented (General Motors)	1	8.1	1	58.3 (7) / (12)				2	No significant change from 1985
	Source Oriented (Burnstein)	1	8.8	1	33.3 (4) / (12)				2	" "
	Source Oriented (Niagara-Structural Steel)	1	6.6	1	25.0 (3) / (12)					
Total Suspended Particulate Matter	Commercial	1	60	0		9.1 (4) / (44)			16,19	" "
Lead in Suspended Particulate Matter	Commercial	1	.1			0 (0) / (44)			19	" "
Soiling Index	Commercial	1	.24	0		0 (0) / (262)			16,19	" "
Localized Problem(s):	Dustfall is causing nuisance effects resulting in complaints, reduced recreational use and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Abatement measures were implemented by Aimco in 1981, but new measures are required. Abatement is required and negotiations are ongoing with Burnstein. Main station being relocated in 1987.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
ST. MARYS										
Total Suspended Particulate Matter	Industrial/ Residential	1	40	0		0 (0)/(61)			6,13	No significant change from 1985
Localized Problem(s):	Suspended particulate matter is causing structures and materials corrosion resulting in complaints and increased cost for cleaning, maintenance and repairs of buildings and/or objects. A reduction program is underway for St. Mary's Cement.									
ST. THOMAS										
Total Suspended Particulate Matter	Industrial/ Residential	3	34-54	0		1.5 (2)/(132)			2,13,19	No significant change from 1985
Lead in Suspended Particulate Matter	Industrial/ Residential	1	.1			0 (0)/(53)			9	" "
Localized Problem(s):	Suspended particulate matter is causing structures and materials corrosion resulting in complaints and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Abatement is required to meet existing standards, guidelines or criteria for Canron Ltd. Further abatement requirements under development.									
SARNIA										
Sulphur Dioxide	Commercial/ Residential	1	.008	0		.02 (2)/(8292)		0 (0)/(354)	1, 5,10	No significant change from 1985
Nitrogen Dioxide	Commercial/ Residential	1	.021			0 (0)/(357)		0 (0)/(8310)	1, 5,16, 19	" "
Carbon Monoxide	Commercial/ Residential	1	.2				0 (0)/(951)	0 (0)/(7612)	16,19	" "
Total Reduced Sulphur	Residential/ Commercial	1	.0002						5	" "

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
SARNIA (cont'd)										
Soiling Index	Commercial	1	.31	0		.6 (2)/(362)			8,16,19	No significant change from 1985
Ozone	Commercial	1	.021					.4 (30)/(8419)	14,20	" "
Total Suspended Particulate Matter	Commercial/ Residential	3	38-45	0		0 (0)/(173)			8,16,19	" "
	Residential	1	40	0		0 (0)/(58)			8,16,19	" "
Lead in Suspended Particulate Matter	Commercial	1	0.1			0 (0)/(57)			19	" "
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber and/or ornamental shrubs. Additional regulatory programs/policies are required.									
SAULT STE. MARIE										
Sulphur Dioxide	Industrial/ Residential	1	.007	0		0 (0)/(348)		0 (0)/(8357)	2,10,	No significant change from 1985
Total Reduced Sulphur	Industrial/ Residential	1	.7 ppb					0 (0)/(4537)		" "
Nitrogen Dioxide	Industrial/ Residential	1	.017			0 (0)/(347)		.02 (2)/(8342)	2,10,19	" "
Carbon Monoxide	Industrial/ Residential	1	.6					0 (0)/(8325)	2,10,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
SAULT STE. MARIE										
Soiling Index	Industrial/ Residential	1	.4	0		10.1 (35)/(346)			2,10,19	No significant change from 1985
Total Suspended Particulate Matter	Industrial/ Residential	3	39-96	1		20.0 (23)/(115)			10, 2,19	" "
Ozone	Industrial/ Residential	1	14.6 ppb	0				0 (0)/(8358)	20	" "
Lead in Suspended Particulate Matter	Industrial/ Residential	1	.2			0 (0)/(80)			19	" "
Dustfall	Industrial/ Residential	9	2.7-12.1	5	33.8 (24)/(71)				2, 4	" "
Localized Problem(s):	Dustfall from Algoma Steel complex is resulting in complaints from local citizens. Abatement is required to meet existing standards, guidelines or criteria.									
SCARBOROUGH										
Sulphur Dioxide	Residential	2	.003-.006	0		0 (0)/(558)		0 (2)/(13322)	1, 8,10, 20	No significant change from 1985
Nitrogen Dioxide	Residential	1	.022			0 (0)/(355)		0 (0)/(8392)	19,20	" "
Carbon Monoxide	Residential	1	1.0				0 (0)/(8457)	0 (0)/(8457)	19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
SCARBOROUGH (cont'd)										
Soiling Index	Residential	1	.34	0		.3 (1)/(341)			8,19	No significant change from1985
Ozone	Residential	1	.017					.6 (46)/(8217)	14,20	" "
Lead in Suspended Particulate Matter	Residential	2	.1-.2			0 (0)/(202)			19	" "
Total Suspended Particulate Matter	Residential	2	42-55	0		2.3 (5)/(218)			8,16,19	" "
Dustfall	Residential	8	2.4-15.9	4	23.8 (19)/(80)				8,16,19	" "
	Residential/ Industrial	4	3.2-6.6	3	25.6 (10)/(39)				8,16,19	" "
Fluorides	Source Oriented	1	25		0 (0)/(7)				8	" "
SEARCHMOUNT										
Dustfall	Industrial/ Residential	1	4.1	0	9.1 (1)/(11)				4	No significant change from 1985
SMOOTH ROCK FALLS										
Total Reduced Sulphur	Industrial/ Residential	1	0.7					1.3 (9)/(696)	4	Station may become operational in 1986

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
STEPHEN TWP.										
Ozone	Rural	2	.025-.026					.6 (101) / (15904)	14,20	No significant change from 1985
Localized Problem(s):	Ozone is causing vegetation damage resulting in reduced production of agricultural crops, lumber, and/or ornamental shrubs. Additional regulatory programs/policies are required.									
STOUFFVILLE										
Sulphur Dioxide	Rural	1	.002	0		0 (0) / (350)		0 (0) / (8370)	10,20	No significant change from 1985
Nitrogen Dioxide	Rural	1	.012			0 (0) / (356)		0 (0) / (8556)	19,20	" "
Ozone	Rural	1	.02					.1 (7) / (8091)	14,20	" "
Dustfall	Rural	1	1.8	0	0 (0) / (10)				15,19	" "
Total Suspended Particulate Matter	Rural	1	35	0		.9 (1) / (113)			15,19	" "
SUDBURY										
Sulphur Dioxide	Industrial/ Residential/ Urban	10	.004-.009	0		.11 (4) / (3509)		.2 (151) / (82534)	3,10	No significant change from 1985
	Rural	Monitoring Discontinued 1986								
Nitrogen Dioxide	Industrial/ Residential/ Urban	1	.010			0 (0) / (337)			3,10,19	

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
SUDBURY (cont'd)										
Carbon Monoxide	Industrial/ Residential/ Urban	2	.1-.3					0 (0)/(5335)	3,10,19	No significant change from 1985
Ozone	Industrial/ Residential/ Urban	2	.017-.025	0				.07 (10)/(14772)	20	" "
Total Suspended Particulate Matter	Industrial/ Residential/ Urban	3	31-36	0		0 (0)/(1101)			3,10	" "
Lead in Suspended Particulate Matter	Industrial/ Residential/ Urban	4	.1			0 (0)/(153)			19	" "
Soiling Index	Industrial/ Residential/ Urban	4	.12-.2	0		.01 (1)/(8333)			3, 4	" "
Dustfall	Industrial/ Residential/ Urban	2	2.6-3.3	0	6.7 (1)/(15)				3,10	" "
Localized Problem(s):	Sulphur dioxide from Inco and Falconbridge is causing odours and vegetation damage, resulting in complaints from the public and reduced production of agricultural crops, lumber and/or ornamental shrubs. Enforcement is planned or under way.									

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
TERRACE BAY										
Total Reduced Sulphur	Source Oriented	1	1.5					.9 (72) / (8326)	4	No significant change from 1985
Localized Problem(s):	Total reduced sulphur from Kimberley-Clark of Canada Ltd. is causing odours resulting in complaints, concern among local citizens and reduced recreational use. Enforcement is planned or under way.									
THOROLD										
Sulphur Dioxide	Source Oriented (Ont. Paper)	1	.005	0		0 (0) / (361)		.2 (16) / (8647)	4,10	Significant improvement over 1985
	Source Oriented (Exolon)	1	.012	0		.6 (2) / (350)		.2 (16) / (8318)	8,10	No significant change from 1985
Dustfall	Source Oriented (Ont. Paper)	2	3.2-7.3	1	30.4 (7) / (23)				4	Significant improvement over 1985
Total Suspended Particulate Matter	Source Oriented (Exolon)	1	144	1		58.6 (34) / (58)			8,13	Significant improvement over 1985
Total Reduced Sulphur	Source Oriented (Exolon)	1	1.9					2.2 (180) / (8066)	8	" "
Localized Problem(s):	Sulphur dioxide and dustfall from Ontario Paper and total suspended particulates, total reduced sulphur, and sulphur dioxide from Exolon are causing odours, vegetation damage, structures and materials corrosion, and nuisance effects. Impacts are complaints, reduced recreational use and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Abatement is under way and further measures are being investigated for Ontario Paper. Enforcement is planned for Exolon.									

LOCATION / Contaminant	1986 RESULTS									1986 PLANNED RESULTS
	Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	
THUNDER BAY										
Sulphur Dioxide	Commercial	1	.001	0		0 (0)/(355)		0 (0)/(8572)	1, 4	No significant change from 1985
	Residential	1	.001	0		0 (0)/(358)		0 (0)/(8599)	1, 4	" "
Dustfall	Commercial	2	2.7-2.8	0	0 (0)/(24)				7,16,19	" "
	Residential	3	2.0-2.7	0	0 (0)/(36)				7,10,19	" "
	Industrial	2	3.8-3.9	0	4.2 (1)/(24)				4, 7,16, 19	" "
Total Reduced Sulphur	Industrial	1	1.0					.05 (4)/(8071)	4	" "
Total Suspended Particulate Matter	Commercial	2	33-40	0		.9 (1)/(110)			7,16,19	" "
	Residential	2	30-31	0		0 (0)/(114)			7,10,16, 19	" "
	Industrial	2	44	0		3.5 (4)/(116)			4,16,19	" "
Lead in Suspended Particulate Matter	Commercial	2	.1-.2			0 (0)/(110)			19	" "
Carbon Monoxide	Residential/ Commerical	1							19	

LOCATION / Cintaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
THUNDER BAY (cont'd)										
Ozone	Residential/ Commercial	1	.016					0 (0) (5491)	20	No significant change from 1985
Soiling Index	Residential/ Commercial	1		0		0 (0) (180)			8,10,16, 19	" "
Nitrogen Dioxide	Residential/ Commercial	1							1,4,10, 19	
Localized Problem(s):	Total reduced sulphur and dustfall from industry are causing odours and soiling resulting in complaints, concern among local citizens and reduced recreational use. Enforcement is planned or underway.									
TIMMINS										
Dustfall	Dustfall Monitoring Discontinued 1986									
Total Suspended Particulate Matter	Residential/ Commercial	1	38	0		1.9 (1) (53)			16	No significant change from 1985
TORONTO										
Sulphur Dioxide	Commercial/ Residential	1	.004	0		0 (0) (364)		0 (0) (8505)	1, 8,10, 20	No significant change from 1985
	Industrial/ Residential	1	.004	0		.3 (1) (347)		0 (0) (8259)	1, 8,10, 20	" "
Nitrogen Dioxide	Commercial/ Residential	2	.027-.035			0 (0) (585)		0 (0) (13892)	19,20	" "
	Industrial/ Residential	1	.034			0 (0) (362)		0 (0) (8494)	19,20	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
TORONTO (cont'd)										
Carbon Monoxide	Commercial/ Residential	2	1.0-3.5				.3 (40) / (14032)	0 (0) / (14032)	19	No significant change from 1985
	Industrial/ Residential	1	.8				0 (0) / (8487)	0 (0) / (8487)	19	" "
Soiling Index	Commercial/ Residential	2	.39-.66	1		3.7 (22) / (593)			8,16,19	" "
	Industrial/ Residential	1	.37	0		1.4 (5) / (362)				" "
Ozone	Commercial/ Residential	1	.015					0.1 (11) / (8235)	14,20	" "
	Industrial/ Residential	1	.016					.5 (38) / (8180)	14,20	" "
Lead in Suspended Particulate Matter	Commercial/ Residential	1	.2		0 (0) / (12)	0 (0) / (308)			19	" "
	Industrial/ Residential	5	.1-.7		0 (0) / (60)	1.2 (14) / (1149)			3,19	" "
	Residential	2	.1-.4		0 (0) / (24)	0 (0) / (411)			3,19	" "
Total Suspended Particulate Matter	Commercial/ Residential	1	51	0		1.5 (5) / (334)			8,11,19	" "
	Industrial/ Residential	5	43-60	0		5.1 (59) / (1152)			3, 8,11	" "
	Residential	2	48-61	1		4.9 (19) / (391)			8,11,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
TORONTO (cont'd)										
Dustfall	Residential	8	3.4-5.5	2	6.9 (5)/(72)				16,19	No significant change from 1985
	Commercial/ Residential	8	3.8-9.0	5	20.5 (16)/(78)				16,19	" "
	Industrial/ Residential	13	3.9-13.0	11	46.2 (49)/(106)				8,13,19	" "
	Source Oriented	6	4.3-15.7	4	47.2 (25)/(53)				8,19	" "
Fluorides	Source Oriented	3	24-155		45.8 (11)/(24)				6	" "
	Commercial/ Residential	2	21-29		0 (0)/(13)				16	" "
	Industrial/ Residential	1	26		0 (0)/(7)				16	" "
Localized Problem(s):	Hydrocarbons from Junction Triangle, lead from Bathurst/Front refiners and smelters, diesel fumes and noise from the Danforth/Coxwell TTC Yard, and amines from Keele/St. Clair meat packing plants are causing odours and may be causing health effects resulting in complaints and concern among local citizens. Additional regulatory programs/ policies are required for Junction Triangle. Abatement is required to meet existing standards, guidelines or criteria for the other local problem areas.									
WAWA										
Sulphur Dioxide	Residential	1	.005	0		0 (0)/(303)		.3 (14)/(5426)	2,10	No significant change from 1985

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
WELLAND										
Dustfall	Source oriented	3	4.4-9.9	2	36.1 (13)/(36)				8,13	Possible improvement over 1985
Total Suspended Particulate Matter	Source oriented	1	42	0		0 (0)/(60)			8,13	" "
WINDSOR										
Sulphur Dioxide	Commercial	2	.008	0		0 (0)/(700)		0 (0)/(16614)	1, 2, 8, 10	No significant change from 1985
	Industrial	2	.006-.01	0		0 (0)/(712)		0 (0)/(17051)	1, 2, 8, 10	" "
	Residential	2	.006	0		0 (0)/(684)		0 (0)/(16253)	1, 2, 8, 10	" "
Nitrogen Dioxide	Commercial	1	.025			0 (0)/(346)		0 (0)/(8138)	5,16,19,	" "
Carbon Monoxide	Commercial	1	.5				0 (0)/(1004)	0 (0)/(8033)	8,19	" "
Soiling Index	Commercial	1	.43-.52	1		2.7 (18)/(655)			2,8,16, 19	" "
	Residential	1	.42-.57	1		4.4 (38)/(864)			2,8,16, 19	" "
Ozone	Commercial	1	.017					.5 (39)/(8215)	14, 20	" "
Total Suspended Particulate Matter	Commercial	5	49-69	4		5.1 (27)/(534)			2, 8,13, 16,19	" "

LOCATION / Contaminant	1986 RESULTS: Classification of Station Locations	Number of Stations	Range of Annual Averages	Number of Stations Above Annual Criterion	% Data Above 1-Month Criterion	% Data Above 24-Hour Criterion	% Data Above 8-Hour Criterion	% Data Above 1-Hour Criterion	Major Source of Pollution (Code)	1986 PLANNED RESULTS
WINDSOR (cont'd)										
Total Suspended Particulate Matter	Residential	9	45-68	2		3.3 (18)/(543)			2, 8,13, 16,19	No significant change from 1985
	Industrial	3	72-86	3		17.6 (30)/(170)			2, 8,13, 19,20	" "
Lead in Suspended Particulate Matter	Commercial	4	.1-.2			0 (0)/(471)			19	" "
	Residential	6	.1-.3			0 (0)/(301)			19	" "
	Industrial	3	.1-.2			0 (0)/(147)			19	" "
Total Reduced Sulphur	Industrial	2	.0003-.002						2,20	" "
Localized Problem(s):	Local sources of ozone, and suspended particulate matter and total reduced sulphur from Wayne County, Michigan, are causing concern for vegetation damage, health effects, structures and materials corrosion, and odours. Impacts are reduced production of agricultural crops, lumber and/or ornamental shrubs, complaints, concern among local citizens, and increased costs for cleaning, maintenance and repairs of buildings and/or other objects. Additional regulatory programs/policies are required for ozone. Enforcement action is planned or underway for Wayne County, Michigan. Improved control of particulates emissions is planned for the Ford Motor casting plant and Zalev Bros. scrap yard. Further odour abatement under study at Ford casting plant. Chrysler mini-van plant has taken steps to reduce odour.									
YORK										
Dustfall	Residential	3	3.9-5.7	2	17.2 (5)/(29)				8,16,19	No significant change from 1985
	Source Oriented	2	4.3-13.7	1	33.3 (6)/(18)				6,19	" "

AIR QUALITY CRITERIA EXCEEDENCES

The chart below summarizes historical exceedences of air quality criteria.

	1984-85		1985-86		1986-87 Planned				1986-87 Actual	
	% Time Criterion was Exceeded	No. of Monitoring Stations	% Time Criterion was Exceeded	No. of Monitoring Stations	No. of Stations Expecting No Significant Change in Air Quality over 1985	No. of Stations Expecting Improved Air Quality	No. of Stations Expecting Deteriorated Air Quality	No. of Stations Without Projections	% Time Criterion was Exceeded	No. of Monitoring Stations
Dustfall (monthly criterion)	25.3	225	24.3	218	216	11	0	1	22.6	220
Total Suspended Particulates (24 hr. criterion)	6.6	146	6.0	143	137	3	0	0	5.5	207
Sulphur Dioxide (24 hr. criterion)	0.1	74	0.0	62	71	2	0	0	0.03	61
Lead in Particulate Matter (24 hr. criterion)	0.5	61	1.8	57	46	0	0	10	3.1	62
Total Reduced Sulphur (1 hr. criterion)	0.6	23	0.6	22	15	1	1	5	1.1	26
Soiling Index (24 hr. criterion)	2.9	22	1.4	23	22	0	0	0	1.7	22
Ozone (1 hr. criterion)	0.5	32	0.4	33	30	0	0	0	0.4	32
Carbon Monoxide (8 hr. criterion)	0.0	23	0.0	24	23	0	0	0	0.04	23
Nitrogen Dioxide (24 hr. criterion)	0.0	29	0.0	26	22	0	0	3	0.0	26

AIR QUALITY CRITERIA EXCEEDENCES

The chart below summarizes historical exceedences of air quality criteria.

	1984-85		1985-86		1986-87 Planned				1986-87 Actual	
	% Time Criterion was Exceeded	No. of Monitoring Stations	% Time Criterion was Exceeded	No. of Monitoring Stations	No. of Stations Expecting No Significant Change in Air Quality over 1985	No. of Stations Expecting Improved Air Quality	No. of Stations Expecting Deteriorated Air Quality	No. of Stations Without Projections	% Time Criterion was Exceeded	No. of Monitoring Stations
Dustfall (monthly criterion)	25.3	225	24.3	218	216	11	0	1	22.6	220
Total Suspended Particulates (24 hr. criterion)	6.6	146	6.0	143	137	3	0	0	5.5	207
Sulphur Dioxide (24 hr. criterion)	0.1	74	0.0	62	71	2	0	0	0.03	61
Lead in Particulate Matter (24 hr. criterion)	0.5	61	1.8	57	46	0	0	10	3.1	62
Total Reduced Sulphur (1 hr. criterion)	0.6	23	0.6	22	15	1	1	5	1.1	26
Soiling Index (24 hr. criterion)	2.9	22	1.4	23	22	0	0	0	1.7	22
Ozone (1 hr. criterion)	0.5	32	0.4	33	30	0	0	0	0.4	32
Carbon Monoxide (8 hr. criterion)	0.0	23	0.0	24	23	0	0	0	0.04	23
Nitrogen Dioxide (24 hr. criterion)	0.0	29	0.0	26	22	0	0	3	0.0	26

AIR QUALITY EVALUATION SUMMARY

The chart below summarizes the number and percentage of Ontario communities affected by different types of air emissions. Communities may be affected by more than one type of emission source.

	1984-85	1985-86	1986-87 Planned	1986-87 Actual
No. of communities assessed for air quality	84	86	84	85
No. of communities with air quality affected by industrial emissions	72 (86%)	72 (84%)	72 (86%)	70 (82%)
No. of communities with air quality affected by vehicle emissions	42 (50%)	41 (48%)	43 (51%)	41 (48%)
No. of communities with air quality affected by space heating emissions	27 (32%)	27 (31%)	28 (33%)	26 (31%)
No. of communities with air quality affected by construction and urban activity	24 (29%)	26 (30%)	25 (30%)	26 (31%)
No. of communities with air quality affected by long range transport or transboundary pollution	31 (37%)	32 (37%)	33 (39%)	31 (36%)
No. of communities with air quality affected by photochemical reactions in the atmosphere	24 (29%)	25 (29%)	29 (34%)	25 (29%)
No. of communities with air quality affected by agricultural activities	2 (2%)	2 (2%)	2 (2%)	2 (2%)
No. of communities with air quality affected by fugitive emissions	18 (21%)	18 (21%)	25 (29%)	16 (19%)
No. of communities with air quality affected by incinerator emissions	3 (4%)	3 (4%)	3 (4%)	3 (4%)

APPENDIX L

INVENTORY OF INCINERATORS

1986-87 Actual

A. MUNICIPAL INCINERATORS

Collingwood, Simcoe County
Commissioners St., Toronto
Dresden, Kent County
Port Colborne, R.M. of Niagara

B. ENERGY-FROM-WASTE INCINERATORS

SWARU, Hamilton
Victoria Hospital, London
(planned for 1987-88)

C. SPECIAL WASTE INCINERATORS

Syntath, St. Catharines
Tricil, Corunna

D. SEWAGE SLUDGE INCINERATORS

Ashbridges Bay WPCP, Toronto
Duffin Creek WPCP, Pickering
Greenway WPCP, London
Lakeview WPCP, South Peel (Mississauga)
Woodward Ave. WPCP, Hamilton

E. BIOMEDICAL WASTE INCINERATORS

137 hospitals

The following biomedical waste incinerators also accepted special wastes in 1986-87:

Queensway General Hospital, Etobicoke
St. James Cemetary and Crematorium, Toronto
York Central Hospital, Richmond Hill
Scarborough Centenary Hospital, Scarborough

APPENDIX M

INVENTORY OF MUNICIPAL LANDFILL SITES IDENTIFIED AS HAVING PROBLEMS

INVENTORY OF WASTE DISPOSAL SITES OPERATED BY CORPORATIONS FOR THEIR OWN NON-HAZARDOUS WASTES WITH GROUNDWATER, SURFACE WATER, GAS CONTROL OR SITE MANAGEMENT PROBLEMS

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED A) GROUNDWATER POLLUTION B) SURFACE WATER POLLUTION C) GAS MIGRATION D) OTHER	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S) 1) PRIVATE OR MUNICIPAL WATER SUPPLY CONTAMINATION 2) SURFACE WATER CONTAMINATION PROBLEMS 3) GAS HAZARDS 4) NUISANCE EFFECTS AND INTERFERENCE WITH THE USE OF NEIGHBOURING PROPERTY (SMOKE, NOISE, AESTHETICS, LITTER, RATS ETC.	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM A) STUDY B) UPGRADING C) NONE D) OTHER YEAR WHEN PROBLEM CORRECTION WILL BE COMPLETED
NORTHWESTERN REGION			
Dryden, Great Lakes Forest Products	B, leachate break-out D, steep face	2, contamination of local drainage system	A, consider leachate control system
Fort Frances, Boise Cascade	B, leachate break-out D, steep face	2, contamination of local drainage system	D, new site approved, close and rehabilitate in 1988
NORTHEASTERN REGION			
Bistal Twp., Mallette Waferboard	D, site causing fires B	2 4, smoke	D, enforcement action
Alban Sawmill, G.W. Martin Forest Products	B	2	A

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
NORTHEASTERN REGION			
Cochrane, Mormick	B	2 4, dust	B, upgrading
Haileybury, Rexwood Products Ltd.	B		D, site capped in 1986, should show reduced leachate in 1987
Cobalt, Agnico Eagle Mines Ltd.	D, closure		D, waste to be relocated to new site 1987-88
SOUTHWESTERN REGION			
K & E (Township of Sarnia)	D, odour, litter	4, litter and odours	B, 1987
Zorra Twp., Oxford County - Canada Cement LaFarge Ltd.	B	2	A, B 1988
Unitec (Township of Moore)	B	2, seepage from site	A, 1987
WEST CENTRAL REGION			
Welland, Atlas Steel	B, oil break-out D, capping of non-active areas ongoing	2, contained 4, aesthetics	B, upgrading site cap
Niagara Falls, Norton Company	D, site closure	4, aesthetics, litter	D, site closure
Brantford, Bell City Foundry	D	4, aesthetics	D, cover or removal 1987

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
CENTRAL REGION			
Oshawa, Industrial Disposal Site	B	2, leachate gaining access to surface water	Leachate collection system installed in 1985
Oshawa, Robson Lang Tannery Site	B	2, leachate gaining access to surface water	B, hydrogeological study to be carried out in 1987
Monmouth, Wilberforce Veneer	No assessment to date		
Harcourt, Martin Lumber	No assessment to date		
Monmouth, Clapow Hill	No assessment to date		
SOUTHEASTERN REGION			
No problems			

INVENTORY OF WASTE DISPOSAL SITES OPERATED BY THE MINISTRY OF NATURAL RESOURCES WITH GROUNDWATER, SURFACE WATER, GAS CONTROL OR SITE MANAGEMENT PROBLEMS

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED A) GROUNDWATER POLLUTION B) SURFACE WATER POLLUTION C) GAS MIGRATION D) OTHER	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S) 1) PRIVATE OR MUNICIPAL WATER SUPPLY CONTAMINATION 2) SURFACE WATER CONTAMINATION PROBLEMS 3) GAS HAZARDS 4) NUISANCE EFFECTS AND INTERFERENCE WITH THE USE OF NEIGHBOURING PROPERTY (SMOKE, NOISE, AESTHETICS, LITTER, RATS ETC.)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM A) STUDY B) UPGRADING C) NONE D) OTHER YEAR WHEN PROBLEM CORRECTION WILL BE COMPLETED
NORTHWESTERN REGION			
One Island Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Eaglehead Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Burchell Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Pace Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Sherwood	D, frequency of maintenance	4, smoke, aesthetics	D, enforcement in 1987-88
Lac Lou	D, frequency of maintenance	4, smoke, aesthetics	A, study and review by MNR caused by Keewatin closure to non-residents
Polly Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Wildgoose Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Jellicoe	D, frequency of maintenance	4, smoke, litter	D, being moved in 1987-88
Obanga Lake	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
Armstrong	D, frequency of maintenance	4, smoke, litter	D, enforcement in 1987-88
East Hawk	D, no screening	4, litter, aesthetics	A, study to relocate site, forest fire removed screening from Trans Canada Highway
MacDirmid	D, overuse	4, smoke, litter	D, enforcement in 1987-88
NORTHEASTERN REGION			
Croft Twp. A-7034002	D, smoke	4	D, 1988
Pringle Twp. A-7121902	A	2	D, under review 1988
East Mills Twp. A-7104502	D	4	D, relocation - 1989
Wallbridge Twp. A-7252402	D, drainage problem	2	B, upgrading - 1988
Fisher Twp.	D, cover	4	D, 1987
Striker Twp.	D, cover	4	D, 1987
Laurier Twp. A-7085901	D, capacity	4	D, new site approval 1988

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Kukagami Lake	D	4	B, D surface water monitoring
Cascaden Twp.	D	4	B
Delamere Twp.	D	4	B
Bigwood Twp.	D	4	B
Burwash Twp., Estaire	D	4	B
Havilland Twp.	D, capacity	4	D, closure - 1988
West Twp.	D, odours	4	D, 1987
SOUTHWESTERN REGION No sites			
WEST CENTRAL REGION No sites			
CENTRAL REGION No problems			
SOUTHEASTERN REGION No problems			

INVENTORY OF MUNICIPALLY OR PRIVATELY OPERATED WASTE DISPOSAL SITES WITH GROUNDWATER, SURFACE WATER, GAS CONTROL OR SITE MANAGEMENT PROBLEMS

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED A) GROUNDWATER POLLUTION B) SURFACE WATER POLLUTION C) GAS MIGRATION D) OTHER	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S) 1) PRIVATE OR MUNICIPAL WATER SUPPLY CONTAMINATION 2) SURFACE WATER CONTAMINATION PROBLEMS 3) GAS HAZARDS 4) NUISANCE EFFECTS AND INTERFERENCE WITH THE USE OF NEIGHBOURING PROPERTY (SMOKE, NOISE, AESTHETICS, LITTER, RATS ETC.)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM A) STUDY B) UPGRADING C) NONE D) OTHER YEAR WHEN PROBLEM CORRECTION WILL BE COMPLETED
NORTHWESTERN REGION			
Manitouwadge	D, new site	4, start-up problems/maintenance	A, study in 1987
Marathon	D, development encroaching on landfill	4, nuisance, aesthetics	D, new site planned 1987
Thunder Bay	A, possible	2	A, study 1987
Paipoonge	A, possible gas problems	3	A, study 1987
Keewatin	D, at capacity	4	A, waste management master plan in 1988
Fort Frances	D, no operating plans	4	D, preparation by town in 1987-88

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Sioux Lookout	D, at capacity	4	A, study for new site in 1987 for use in 1988
Kenora	D, at capacity	4	A, waste management master plan in 1988
NORTHEASTERN REGION			
Massey Town	D	4	A, B 1987
Sudbury Region	D B	4 2	A B
Assiginack, Manitoulin	D		A
Laird Twp.	D, burning	4	B, 1987 D, charges
Sault Ste. Marie, Cherokee	A, B	1, 2	D, EA B, 1987-88
Perry Twp., A-522503	D, capacity	4	A, D new site located, study required - 1988
North Bay, A-530101	A, B	2, 4 birds	A, D closure - 1990
McDougall Twp., MCS Site	A	1, possible 2	A, hydrogeological assessment D, possible closure - 1990
Pedley Twp., Labelle Site	D, wastes off property	4	D, site expansion 1988

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Jocelyn Twp.	D, cover	4	B, 1987
Kendall Twp., Hearst	Site management, at capacity	4	D, expanding site
Hilton Twp.	D, cover	4	B, 1987
Hillard Twp., Thornloe	D, site nearing capacity	4, smoke, aesthetics	D, funding under WMIP
Mivitie Twp. Claim 1261 Larder Lake	Site management	4	D, enforcement and WMIP
Wicksteed Twp., Hornepayne	Site management	4	
O'Brien, Kapuskasing	Site management, at capacity	4	D, developing new site
Fauquier, Moonbeam	Site management	4	D, WMIP
Temagami	D, at capacity	4	D, site closure, new site approved - 1988
Deloro Twp., Timmins	Site management	4	A, study, WMIP
Glackmeyer Twp., Cochrane	Site management	4	A, study D, WMIP
Haileybury	D, not properly certified	4	D, new application, hearings - 1989
Cockburn, Manitoulin	D, upgrading of site		D
Little Current, Manitoulin	D, site at capacity	4, smoke	

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Tarbutt Twp.	D, upgrading	4	B, 1987 D, charges
SOUTHWESTERN REGION			
Neustadt Village A-26-10-01 Pt. Lot 3, Concession 14	D, routine compaction and cover	4 smoke, aesthetics	B
Collingwood Twp., A-26-14-01 Pt. Lot 26, Concession 10	D, routine compaction and cover required	4, smoke, aesthetics, litter	A, B site study under way 1987
Grand Bend	A, off-site migration of leachate	1, possible future water supply contamination	A, D closure
Essex Landfill #2	A	2	D, collection of leachate, surface water control
Essex Landfill #1	B	2	A, D collection of leachate
Essex Landfill #3	D, site mismanagement and litter	4	A, D re-certification in 1987
Romney	B	2	A
Township of Logan	Upgrading in accordance with regulations	4, aesthetics, lack of cover	Frequent inspections
Township of Mosa	Upgrading in accordance with regulations	4, aesthetics, lack of cover	Frequent inspections
Township of McGillivray	Upgrading in accordance with regulations	4, aesthetics, lack of cover	Frequent inspections
Township of Blanshard	Upgrading in accordance with regulations	4, aesthetics, smoke	Frequent inspections

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Town of Hanover, A-27-19-01	C	3	A, study undertaken, buffer lands purchased
Town of St. Marys	Ponding of contaminated surface water	Nuisance effect, odours	D, aeration of ponded surface water
Township Goderich, A-16-13-02 Pt. Lot 13+14 Huron Rd. Conc.	B, leachate seepage into stream	2	A, B closure plan for existing area to be completed Fall 1987
WEST CENTRAL REGION			
Waterloo City	B, D site upgrading program	2	B, expanded leachate collection system to be installed
Cambridge	D, site upgrading program	1, 2 potential	A, monitoring underway 1987-88
Puslinch	A, B potential		B,A,D, monitoring
Central Wellington	A, B	4, odour, dust	B, D closure in 1988
Minto	A		A, B ongoing monitoring - 1988
Mono	A		A, B ongoing monitoring - 1988
Brantford Twp.	A, leachate moving off-site	2, elevated levels in surface water	A, consultant monitoring stream B, township purchased buffer land and upgraded
Delhi	A		A, continued monitoring
Pelham	D	4, aesthetics, litter	D, site closure

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Welland City	A, potential B, in drainage channels	2	B, site upgrading and continued monitoring
Niagara-on-the-Lake	A, B potential C, upgrading	2, 4 spray irrigation, landfill leachate	A, B site upgrading and review of leachate collection 1988
Grimsby, Park Rd.	B, D	4, nuisance effects	B, upgrading of site
Niagara Falls	D, monitoring program in effect	4, ground water contamination	A, B site upgrading, leachate collection upgraded
Town of Paris	A, potential D, site improperly located as per C of A	4, litter	A, D upgraded monitoring
Waterloo-Woolwich	A	1, potential contamination of adjacent domestic well	A, site will be closing with controls on site 1987-88
City of Guelph	A,B,D site upgrading	2	A, B upgrading 1987-89 and monitoring
West Garafraxa	D, poor operational condition	4, nuisance effects, aesthetics	A, B 1988
East Luther	B, potential	2, potential	A, B 1988
CENTRAL REGION			
Tiny Twp., Pauzé waste disposal site, A-253101	A	1	site closure - 1987
Stayner, Town A-250801	D, landfilling beyond approval limits		A

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Asphodel Twp., A-340501	D, upgrading	4	A
Mara Twp.	A, B possible	4	A
Rama Twp.	D, poor site location		site to be closed
Orillia Twp.	D, poor site location		site to be closed
Douro Twp., A-340902	D, approaching capacity B	2	A, 1987
Cobourg, Town A-311702 Haldimand Twp.	A,B,D	2, 4 smoke, litter	A, B 1987
Peterborough, City A-341508 Otonabee Twp.	A, B	2	A, B 1987-88
Manvers Twp., A-321801	D, lack of capacity		A 1987-88
Hamilton Twp., A-311802 Bewdley	D, at capacity		D, emergency expansion proposal 1987
Newcastle - Hale Regional Reclaiming Site	B, leachate gaining access to surface water	4, aesthetic	B, leachate collection installed 1985 A, monitoring continues
Wasaga Beach	A, B possible		A
Pinelands - Muskoka Lakes	A, B	2	A, 1988
Bracebridge	A	1	A, 1989

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Pickering - Brock West Landfill Site	C, landfill gas venting to atmosphere	4, gas causing off-site odours, aesthetic problems	gas collection and incineration system to be expanded in 1987
Gravenhurst	B	2	A, 1989
Twp. of Tecumseth, A-253001 S. Simcoe Sanitation W.D.S.			closed 1986
Village of Elmvale, A-252007	D, dumping off-site		A
Essa Twp.	B	2	A
Innisfil Twp.	A		A
SOUTHEASTERN REGION			
West Carleton Twp., Dump A-461002 (Private)	A, B	2, 1	A, 1987 communal water
Nepean, City Site A-461303	A	leachate moving off-site but not offsetting neighbouring properties	A, 1987
Merrickville Village C of A A-442302	D, no supervision	4	D, prosecuted
Drummond Twp., Lot 15, Conc. 5, A-451101	D, poor operation, odours	4	D, hydrological study to be done, 1987
Lanark Twp., Lot 16 Conc. 4, A-451302	D, poor operation, close to surface water, inadequate cover	4	D, operating plan and a hydro-geological evaluation to be prepared, 1987

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
S. Sherbrooke Twp., Lot 17, Conc. 2, A-451805	D, inadequate cover, close to surface water	4	D, council has been asked to close sites, 1988
S. Sherbrooke Twp., Lot 10, Conc. 10, A-451806	D, inadequate cover	4	D, council has been asked to improve operation, 1987
Jones Twp., Lot 128, Conc. RBN, A-413404	D, burning	4	D, meet with municipality to have problem corrected, 1987
Matilda Twp.	D, burning, covering	4, smoke	D, legal action
Arthur Sauve	D, burning	4, smoke	D, legal action
Faraday Twp., C of A, A-370709	A, B		B, leachate collection system being installed - 1987
McNab Twp., Lot 18, Conc. 6, A-412605	D, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Admaston Twp., Lot 15, Conc. 5, A-411301	B	2	A, hydrogeological study, 1988
Alice & Fraser Twp., Lot 23, Conc. 1, A-411601	A, B	2	A, 1987
Bromley Twp., Lot 5, Conc. 10, A-411802	D, odours, burning, insufficient cover material	4	A, part of master plan, 1987
Bromley Twp., Lot 5, Conc. 10, A-411801	D, poor site and operation, burning	4	A, part of master plan, 1987

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Augusta Twp., Maynard WDS C of A, A-441003	A,B, D disposal in unlicensed area	2	A, EA study, 1988
Brockville, City C of A, A-440101	B	2, 1	A, B 1990
Kingston Twp., A-380801	D, at capacity		D, site closure 1987
Madoc Village C of A, A-362002	A, B potential		A, involved in waste management master plan
Wiliamsburg, A-482002	D, burning, covering	4, smoke, rats	B, upgrading
Lochiel Twp.	D, burning, covering	4, smoke, litter, odour	B, upgrading
Kitley Twp., C of A, A-380801	D, disposal in unlicenced area		D, initiate closure 1988
Sherwood Twp., Lot 21, Conc. 8, A-413403	D, poor site, inadequate cover	4	D, meet with municipality to have problem corrected, 1987
Westmeath Twp., Lot 30, Conc. NEF, A-413602	D, poor site, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Wilberforce Twp., Lot 13, Conc. 9, A-413703	D, poor site	4	D, part of master plan, 1987
Bathurst Twp., Lot 20, Conc. 3, A-450601	D, burning	4	D, meet with municipality to have problem corrected, 1987

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
McNab Twp., Lot 18, Conc. 6, A-412605	D, poor operation, burning, odours	4	D, meeting with municipality to have problem corrected, 1987
Raglan Twp., Lot 12, Conc. 6, A-413001	D, poor operation, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Richards Twp., Lot 12, Conc. 6, A-412302	D, poor operation, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Richards Twp., Lot 29, Conc. 3, A-412303	D, poor operation, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Sebastopol Twp., Lot 64, Conc. RCN, A-413304	D, poor operation, burning, odours	4	A, part of master plan, 1987
Sherwood Twp., Lot 6, Conc. A, A-413401	D, poor operation, burning, odours	4	D, meet with municipality to have problem corrected, 1987
Casselman Village	D, burning, covering	4, smoke	D, legal action
Williamsburg, A-482001	D, burning, covering	4, smoke	B
Mountain Twp.	D, burning, covering, rats	4, smoke, rats	B, upgrading
Cambridge Twp., A-471108	D, burning, no gate, covering	4, smoke, aesthetics, litter	D, legal action
St. Isidore de Prescott, A-471802	D, burning, covering	4, smoke, odour	B, upgrading
Winchester Twp., A-482101	D, burning, covering	4, smoke	D, legal action and Control Order

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Gloucester, City Gloucester Federal Site	A	1	A, study
Nepean, City Trail Road	B	2	A, study
City of Ottawa, Ridge Road	B	2	A, study
City of Ottawa, Riverside Drive	C	3	A, study
Edwardsburgh Twp., C of A, A-441404	A, D disposal in unlicenced area		A, waste management master plan D, municipality to move to licenced area
Cardinal Village, C of A, A-441403	D, burning against C of A, no cover	4, rats	B, D prosecution pending
Camden East Twp., C of A, A-370601	D, waste deposited on flood plain		C
Kaladar, Englesea Effingham, C of A, A-362701	D, operating		D, municipality notified
Hinchinbrooke Twp., C of A, A-380503	B,D C of A requires renewing	2	A, development plan required
Barrie Twp., C of A, A-380202	D, C of A needs renewing and upgrading		D, discussion with municipality
Leeds and Lansdowne, C of A, A-442002	D, near capacity, upgrading		D, discussion with municipality

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Leeds and Lansdowne, C of A, A-442003	D, operational problems		D, discussion with municipality
Deloro Village,	D, upgrading, disposal in unlicenced area		C
Bedford Twp., C of A, A-380310	D, not following development plan		D, discussion with municipality
Bedford Twp., C of A, A-380309	D, disposal in unlicenced area		D, MOE to investigate
Bedford Twp., C of A, A-380303	D, disposal in unlicenced area		D, MOE to investigate
Bedford Twp., C of A, A-380301	D, disposal in unlicenced area, upgrading	4, aesthetics, rats, litter	B,D discussion with muncipality, prosecution
Wallaston Twp., C of A, A-362901	D, expansion of site required		D, site closure recommended
Tweed Village C of A, A-361702	D, operating problems	4	D, letter to municipality June 1987
Rawdon Twp., C of A, A-362408	D, at capacity	4	D, township advised to close site 1987
Barrie Twp., C of A, A-371108	B,D burning, cover	2, possible	A,B 1987

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Monteagle Twp., C of A, A-362304	D, operation has expanded without C of A amendment		D, township to apply for expansion
Escott Twp., C of A, A-441703	D, burning	4	D, prosecution successful
Quinte Sanitation, C of A, A-362502	A, D	1	A, D construction of communal water

INVENTORY OF INACTIVE WASTE DISPOSAL SITES WITH GROUNDWATER, SURFACE WATER, GAS CONTROL OR SITE MANAGEMENT PROBLEMS

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED A) GROUNDWATER POLLUTION B) SURFACE WATER POLLUTION C) GAS MIGRATION D) OTHER	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S) 1) PRIVATE OR MUNICIPAL WATER SUPPLY CONTAMINATION 2) SURFACE WATER CONTAMINATION PROBLEMS 3) GAS HAZARDS 4) NUISANCE EFFECTS AND INTERFERENCE WITH THE USE OF NEIGHBOURING PROPERTY (SMOKE, NOISE, AESTHETICS, LITTER, RATS ETC.)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM A) STUDY B) UPGRADING C) NONE D) OTHER YEAR WHEN PROBLEM CORRECTION WILL BE COMPLETED
NORTHWESTERN REGION			
Dryden, Town	D, final cover incomplete	4, potential for leachate generation	D, ongoing measures 1988
Great Lakes Forest Products Colenso Site, Red Lake Road	D, leachate breakout	4, runoff to local creek	D, site to be rehabilitated in 1987-88
Manitouwadge	B, leachate	2	A, study and monitoring 1987-88
NORTHEASTERN REGION			
Perry Twp.	A	1, possible	A, by consultant - 1988
Algoma Steel Slag Dump	A	4, under study	A

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
SOUTHWESTERN REGION			
London Twp.	B	2	D, remedial work by township 1987-88
London, Thompson Road	B	2, potential	B
London, Elmwood Avenue	B	2, potential	A
London, Euston Street	B	2, potential	A
Windsor, Malden Road	B	2	A, 1989
Windsor, Easterly	B	2	A, 1989
WEST CENTRAL REGION			
Kitchener, Ottawa Street	C	4, interference with use of neighbouring property	D, gas vented and used by adjacent industry, lawsuit underway
Newton, Galt C of a, A-140101	B, A potential	1, potential	A, B reconstruction of drainage ditches and surface water drainage networks
Caledonia, Peebles Street	A, potential D, low level radioactive waste	1, 3 potential	A, security fund, hydro study
CENTRAL REGION			
Nelson, Otonabee Twp.	A, B	1, 2	A, study by Waste Management Branch D, monitoring

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
Peterborough Airport, North Monaghan Twp.	C	3, venting system installed for main air terminal	A
Aurora, WMI York San #1 site	A C	1, private well supply contamination	Replace with municipal water supply A, hydrogeological study
Seynour Twp.	A, private wells C, gas	1, private wells	A, 1987
Lindsay, Elgin Street	C, gas B, leachate and gas		D, monitoring and yearly collection
Lindsay, Lindsay Street N.	C, gas B, leachate and gas		D, monitoring and yearly collection
Markham, Sabisten landfill site	C	3, gas hazard to adjacent homes, off-site odours	Gas collection and burner installed in 1985
Vaughan, Vaughan Landfill Site	A, groundwater pollution C, gas migration	3, groundwater deteriorating	Purge well system installed in 1985 A, hydrogeologic study
Oshawa, Oshawa Landfill	C	3	Gas collection and venting system installed in 1978
Twp. of Muskoka Lakes, Wood Ward	A		D, review by district staff
Whitchurch-Stouffville WMI-York Sanitation #4 site	A	Groundwater deterioration	Ongoing monitoring, replaced private wells with municipal water
Pickering, Brook North Landfill Site	B	2	Leachate collection system installed in 1985

NAME OF SITE AND LOCATION	PROBLEM(S) EXPERIENCED	SIGNIFICANT EFFECTS (IF ANY) ASSOCIATED WITH THE WASTE SITE PROBLEM(S)	REMEDIAL MEASURES UNDERTAKEN TO CORRECT THE PROBLEM
SOUTHEASTERN REGION			
Cornwall City	C	4, odours	A, B 1987-88
Ottawa, Riverside Drive	C	3	A, 1987
Westbrooke (MTC) C of A, A-380808	D, needs closure		D, upgrading in 1986, needs follow-up inspection
Picton Town C of A, A-350101	B, potential		A, leachate characterization study 1987-88
Trenton City C of A, A-360201	B, C		A, 1987-88
Kingston City C of A, A-380101	B		A
Ottawa, Pinecrest	C	3	D, methane collection system to be installed 1987

APPENDIX N

INVENTORY OF LIQUID INDUSTRIAL WASTE SITES, FACILITIES, TREATMENT CENTRES AND PLANTS

1986-87 Actual

A. INCINERATORS

Syntath, St. Catharines
Tricil, Corunna*

B. DIRECT LANDFILL

Abitibi-Price, Halton Hills
City of Brantford
City of Guelph
City of Paris
City of Welland
Dow Chemical of Canada Ltd., Sarnia
Imperial Oil Ltd., Sarnia
Polysar Ltd., Sarnia
Township of Hamilton
Tricil Ltd. (Landfill), Corunna

C. SEWAGE TREATMENT PLANTS

Ashbridges Bay, Toronto
Baker Road STP, Grimsby
Barry's Bay, STP
Belleville, STP
Brantford, WPCP

C. SEWAGE TREATMENT PLANTS (Continued)

Chrysler Canada Ltd., Windsor
Clarkson, Mississauga, WPCP
Cobourg #1, WPCP
Cobourg #2, WPCP
Corbett Creek, Whitby WPCP
Cornwall, WPCP
Dofasco, Hamilton
Duffin Creek STP, Pickering
East York Plant, Toronto
Esso, Sarnia
Gananoque Lagoon, PUC
General Motors, London
General Motors, Windsor
Hamilton Municipal Plant
Harmony Creek, Oshawa
Humber Plant, Toronto
Kitchener, WPCP
Niagara WPCP #1, (Regional)
Oakville STP
Peterborough, WPCP
Petro Canada, Oakville
Petrolia, WPCP
Polysar Ltd., Sarnia
Port Dalhousie, St. Catharines, WPCP
Port Darlington Bowmanville, WPCP

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* Facility causing one or more of the following problems: surface or groundwater supply contamination, localized aquatic ecosystem impacts or odours.

C. SEWAGE TREATMENT PLANTS (Continued)

Port Weller, Thorold, WPCP
Stelco, Hamilton
Trenton, WPCP
Unitec Inc., Sarnia*
Welland WPCP

D. RECLAIMERS/REUSERS

Aimco Solrec, Milton
Anachemia Solvents, Mississauga
Apco Industries, Toronto
B and B Waste Recycling and Disposal, Gloucester
Canadian Oil Co., Toronto*
Canam, Breslau*
CanAm Oil Services, Toronto
CanAm Oil/Motor City, Windsor
Canflow Services, Sarnia*
Denison Mines, Elliot Lake
Dofasco, Hamilton
Energy Engineering, Bolton
Entropex Corporation, Sarnia
Garden Chemical, Toronto
Hevmet Recovery, Port Colborne
Industrial Chemical Refiners, Toronto
Johnson Matthey, Brampton
Mets Chemical, Scarborough
Petro Canada, Hamilton
Quantex Chemical, Kitchener
Retek Resource Recovery Inc., Brantford
Rio Algom, Elliot Lake
Scanlube Oils, Cambridge
Stelco, Hamilton
Texaco Canada Inc., Jarvis
Thomscan Industrial Services Inc., Mississauga
Varnicolour Chemical Ltd., Elmira*
Woodington Systems, Thorold
Van Waters & Rogers, Etobicoke

E. EXPORT

Americal Tank Service, Ferndale, Michigan
American Resource Recovery, Memphis, Tennessee
Canflow International, Detroit, Michigan
Chemical Recovery Systems, Romulus, Michigan
Chem-Met Services Division, Wyandotte, Michigan
Cimetere Notre Dame Des Neige, Montreal
Commercial Incineration, Cleveland, Ohio
Dearborn Refining, Dearborn, Michigan
Decom, Gatineau, Quebec
Environmental Waste Control Inc., Inkster, Michigan
Frontier Chem, New York
General Motors, Quebec
General Oil Co. Inc., Detroit, Michigan
Kinetic Ecological Res., Niksu Alberta
Maumee Refinery, Toledo, Ohio
Michigan Disposal Inc., Dearborn, Michigan
Nelson Industrial Services, Detroit
Norlite Corporation, Cohoes, New York
Petro-Chem Processing, Detroit, Michigan
Rabco Petroleum, Michigan
Service Central De Reservoirs, Quebec
Stablex Canada Inc., Ste. Therese Quebec
Stenberg Bros., Bark River, Michigan
Systech Corp., Ohio
Systech Corp., Fredonia, Kansas
Tredi, France
Tricil Ltd., Ville Ste. Catherine, Quebec
Uniroyal, Edmonton, Alberta
Waste Acid Services, Michigan
Wayne Disposal, Dearborn, Michigan

F. TRANSFER STATIONS

Canam Oil, Windsor
Cantro Oil Recyclers, Windsor
CPW Disposal (Chem-King Inc.), Twp. of Vespra*
Decom Medical Waste, Etobicoke

F. TRANSFER STATIONS (Continued)

Diversey, Mississauga
Dofasco, Hamilton
Jim's Trucking, Welland
Mac's Liquid Disposal, London
MOE, Huron St. Vault, London
Mosaic Chemical Corp., Mississauga
O.E. MacDougall Liquid Waste, Brockville*
Philip Enterprises, Hamilton
PPG Industries Ltd.
P. & E. Oil Recyclers, Petrolia
Reechem Processing Ltd., St. Catharines
Safety Kleen, Sudbury*
Syntath Ltd., Thorold
Thorco, Scarborough
Toronto Hydro
Tricil Ltd., Mississauga
Tricil Ltd., Thorold
Universal Pneumatic, Niagara Falls
University of Toronto
University of Western Ontario, London

APPENDIX O

INVENTORY OF SEWAGE TREATMENT FACILITIES PRODUCING MARGINAL OR UNACCEPTABLE SLUDGES

1986-87 Actual

SEWAGE TREATMENT FACILITIES PRODUCING MARGINAL SLUDGES	SEWAGE TREATMENT FACILITIES PRODUCING UNACCEPTABLE SLUDGES
Norwood	Burlington Skyway
Belleville	Port Hope
Prescott	
Dunnville	
Ingersoll	
Lowther	
Haileybury	

APPENDIX P

SOURCE SEPARATION PROJECTS FUNDED BY MOE

1986-87 Actual

MUNICIPALITY/ COMPANY	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED*							DIRECT EMPLOYMENT	COMMUNITY PARTICIPATION RATE (%)	REVENUE GENERATED ($ 000s)	NO. OF FIRMS USING SOURCE SEPARATION MATERIAL
		N	G	M	C	H	D	CC				
Durham Recycling Centre	Newcastle	X	X	X	X	X	X	X	7	10 - 50	$ 201	4
	Pickering	X	X	X			X	X				
	Ajax	X	X	X				X				
	Whitby	X	X	X			X	X				
Halton's Recycled Resources	Milton	X	X	X			X	X	20	10 - 50	$ 564	6
	Halton Hills	X					X					
	Burlington	X	X	X	X	X	X	X				
	Oakville	X	X	X	X	X	X	X				
Niagara Recycling	Niagara Falls	X	X	X				X	10	10 - 50	$ 460	4
	Grimsby	X	X	X			X	X				
	Lincoln	X	X	X	X		X	X				
	West Lincoln	X	X	X			X	X				
City of Stratford	Stratford	X	X	X			X	X	3	10 - 50	$ 12	3

* Materials: N = Newspaper, G = Glass, M = Metal, C = Cardboard, H = Highgrade Paper
Processes: D = Depot, CC = Curbside Collection

MUNICIPALITY/ COMPANY	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							DIRECT EMPLOYMENT	COMMUNITY PARTICIPA-TION RATE (%)	REVENUE GENERATED ($ 000s)	NO. OF FIRMS USING SOURCE SEPARATION MATERIAL
		N	G	M	C	H	D	CC				
Grey-Bruce Waste	Victoria Harbour	X	X	X	X			X	4	10 - 50	$ 19	3
	Tiny Tay	X	X	X	X			X				
	Midland	X	X	X	X			X				
	Port McNichol	X	X	X	X			X				
	Barrie	X	X	X			X	X				
	Penetanguishene	X	X	X	X		X	X				
Brampton	Brampton	X	X	X				X	5	10 - 50	$ 72	3
Bracebridge	Bracebridge	X	X	X	X	X	X	X	2	10 - 50	$ 12	3
Cambridge	Cambridge	X	X	X	X			X	N/A	N/A	N/A	N/A
Northumberland Recycling	Cobourg	X	X	X	X	X	X	X	7	10 - 50	$ 44	3
	Port Hope	X	X	X	X			X				
Snowbird Recycling	Grimsby	X	X	X				X	N/A	N/A	N/A	N/A

MUNICIPALITY/ COMPANY	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							DIRECT EMPLOYMENT	COMMUNITY PARTICIPA-TION RATE (%)	REVENUE GENERATED ($ 000s)	NO. OF FIRMS USING SOURCE SEPARATION MATERIAL
		N	G	M	C	H	D	CC				
Guelph	Guelph	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A
Recycle Guelph	Guelph	X	X	X			X		N/A	N/A	N/A	N/A
Halton Hills	Halton Hills	X	X	X				X	N/A	N/A	N/A	N/A
Laidlaw Waste Systems	Mississauga	X	X	X				X	20	10 - 50	$ 594	3
Ottawa	Ottawa	X	X	X			X	X	N/A	N/A	N/A	N/A
Scott's Plains Recycling	Peterborough	X	X	X	X	X	X	X	9	10 - 50	$ 33	5
Toronto	Toronto	X	X	X			X	X	N/A	N/A	N/A	N/A
Please Save and Recycle	Whitby	X	X	X	X	X	X		N/A	N/A	N/A	N/A

APPENDIX Q

SOURCE SEPARATION PROJECTS NOT FUNDED BY MOE

1986-87 Actual

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg*)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING**	
Tottenham District Recycling Inc.	M	Tottenham, Township of Tecumseth	X	X	X	X		X		91	N/A	N/A	1 + 30 volunteers
Adjala Twp.	-	Adjala Twp.		X				X		N/A	N/A	N/A	N/A
Hamilton-Wentworth Third Sector Employment Enterprises	F, M	Hamilton	X	X	X	X	X	X	X	2,452	92,525	2.4	28
		Ancaster	X	X	X				X	154	5,676	2.7	
		Dundas	X	X	X				X	226	7,100	3.0	
		Stoney Creek	X	X	X				X	203	12,365	1.6	

* 1 Mg = 1 tonne

** Average annual percent

N = Newspapers
G = Glass
M = Metal
C = Cardboard

F = Fine
D = Depot
CC = Curbside Collection

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING	
Grey-Bruce Recycling	-	Mount Forest	X					X		1,294	N/A	N/A	3
		Owen Sound	X						X	123	N/A	N/A	N/A
Recycling for Charity Inc.	-	Sarnia	X						X	150	N/A	N/A	3
City of Etobicoke	-	Etobicoke	X	X				X	X	2,920	86,830	3.3	7
Bridgewater Paper Systems	-	Fort Erie	X		X	X		X	X	776	N/A	N/A	3
Goulbourn-Stittsville	-	Kanata	X	X					X	65	9,316	0.7	N/A
Muskoka Containerized	-	Lake of Bays Twp.	X	X				X		N/A	N/A	N/A	N/A
		Muskoka Lakes	X					X	X	N/A	N/A	N/A	N/A

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING	
Wilf Morrison Trucking	-	London	X						X	2,665	99,139	2.8	6
Thornhill Recycling Depot	M	Markham	X	X	X	X		X		200	N/A	N/A	80 volunteers
Unionville Recycling Depot	M	Markham	X	X	X	X		X		172	N/A	N/A	31 volunteers
Mississauga Clean City Campaign	F, M	Mississauga	X	X	X			X		171	118,157	0.1	N/A
City of North York	-	North York		X	X			X		25	149,365	0.02	0.1
Consolidated Fibres Inc.	M M	North York Scarborough York	X X X						X X X	247 549	149,365 133,100	0.6 0.8	N/A N/A

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING	
Region of Peel	-	Caledon	X					X		N/A	N/A	N/A	N/A
Kawartha Field	-	Fenelon Falls	X					X		N/A	N/A	N/A	N/A
Recycling Services Inc.	-	Kingston	X	X	X	X	X	X		N/A	N/A	N/A	N/A
Durham Recycling Centre	-	Oshawa	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A
Renfrew County Recycling	-	Pembroke					X	X		61	N/A	N/A	5
Ridgetown Public School	-	Ridgetown	X					X	X	51	N/A	N/A	0
St. Catharines Waste	-	St.Catharines	X						X	887	25,523	3.2	N/A

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING	
Stolk Enterprises	-	Sarnia		X				X		414	N/A	N/A	1
City of Scarborough	-	Scarborough	X	X				X		595	133,100	0.5	N/A
Total Recycling Systems	-	Wilmot Twp.	X	X	X			X		N/A	N/A	N/A	N/A
		Sarnia	X						X	N/A	N/A	N/A	N/A
		Puslinch Twp	X	X	X			X		N/A	N/A	N/A	N/A
		Kitchener	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A
Niagara Recycling	-	Welland	X	X	X				X	N/A	N/A	N/A	N/A
		Thorold	X	X	X			X	X	N/A	N/A	N/A	N/A
		Port Colborne	X						X	N/A	N/A	N/A	N/A
		Pelham	X	X	X	X	X	X	X	N/A	N/A	N/A	N/A

MUNICIPALITY/ COMPANY	FUNDING SOURCE F = FED M = MUN	SERVICE AREA	MATERIALS RECYCLED/ PROCESSES USED							RESIDENTIAL WASTE RECYCLED (Mg)	RESIDENTIAL WASTE COLLECTED		NO. OF EMPLOYEES
			N	G	M	C	F	D	CC		(Mg)	% DIVERTED FOR RECYCLING	
Scarborough East Recycling Project	-	Scarborough		X	X			X		5.5	133,100	-	N/A
Woodbridge Area Recycling Depot	M	Vaughan	X	X		X		X		46	N/A	N/A	30 volunteers
Whitchurch-Stouffville Recycling Group	M	Stouffville	X	X		X		X		180	4,128	3.3	N/A
The Recycling Centre	-	Windsor	X			X	X	X		3,117	68,750	1.9	8
City of Windsor	-	Windsor	X						X	99	68,750	0.0	14
City of Woodstock	-	Woodstock	X	X	X			X	X	467	N/A	N/A	N/A
Richmond Hill Recycling	-	Richmond Hill	X	X	X	X	X	X	X	N/A	N/A	N/A	2

APPENDIX R

MARKET DEVELOPMENT PROJECTS ON RESOURCE RECOVERED MATERIALS

1986-87 Actual

Ongoing (O)
Completed During the Year (C)

Use of compost as a soil amendment by nurseries for turf growing on steep slopes and for turf maintenance by golf courses (O),

Market and product development of top soil blends with various groups (O),

Monitor the marketing of compost as an ingredient in "potting soil" for use in greenhouses (C),

Investigation of the possibility of having one company marketing the entire compost output from ERRP (C),

The testing of refuse derived fuel (C),

Investigation of compost as soil amendment by public works departments (O),

Product and market development of compost used by conservation authorities (O),

Marketing of plastics and paper from refuse-derived fuel and also making plastics available for secondary recycling (O),

Evaluation of the use of refuse-derived fuel as supplementary fuel for cement kilns (O),

Rationalization of resource-recovered ferrous markets (O),

Market development for recycled rubber products (O), and

Promotional activity with the public at Waste Management Master Plans concerning the 4Rs (O).

APPENDIX S

YOUNG-OF-THE-YEAR FISH CONTAMINANT SURVEILLANCE SUMMARY BY TERTIARY WATERSHED

1986-87 Actual

Code	Watershed Name	PCB		DDT		MIREX		BHC	CHLORDANE	Total Sites Sampled
		Detected	Over Guideline	Detected	Over Guideline	Detected	Over Guideline	Detected	Detected	
2AC	Lake Superior	0	0	0	0	0	0	0	0	3
2BA	Lake Superior	2	0	2	0	0	0	0	0	3
2CA	St. Mary's River	1	0	1	0	0	0	0	0	1
2CE	Spanish River									0
2ED	Nottawasaga River	1	0	1	0	0	0	0	1	1
2GH	Essex County	4	4	4	0	0	0	0	3	4
2GB	Lower Grand River	1	0	1	0	0	0	0	0	1
2HA	Niagara River & Lake Ontario	3	2	4	0	0	0	0	2	4
2HB	Lake Ontario									0
2HC	Lake Ontario									0
2HD	Lake Ontario									0
2HM	Lake Ontario	2	0	0	0	0	0	0	0	0
2MB	West St. Lawrence									0
2MC	Lower St. Lawrence									0
Detection Limits (ng/g)		20		1		5		1	2	
IJC Guidelines (ng/g)		100		1,000		Absent		-	-	

APPENDIX S

YOUNG-OF-THE-YEAR FISH CONTAMINANT SURVEILLANCE SUMMARY BY TERTIARY WATERSHED

1985-86 Actual

Code	Watershed Name	PCB		DDT		MIREX		BHC	CHLORDANE	Total Sites Sampled
		Detected	Over Guideline	Detected	Over Guideline	Detected	Over Guideline	Detected	Detected	
2AC	Lake Superior		1	0		0		0	0	1
2BA	Lake Superior									0
2CA	St. Mary's River									0
2CE	Spanish River	1		0		0		0	0	1
2ED	Nottawasaga River									0
2GH	Essex County		2	2		0		0	0	2
2GB	Lower Grand River									0
2HA	Niagara River & Lake Ontario	3	4	7		0		0	4	7
2HB	Lake Ontario		1	1		0		0	1	1
2HC	Lake Ontario		1	1		0		0	1	1
2HD	Lake Ontario									0
2HM	Lake Ontario									0
2MB	West St. Lawrence	1		1		0		0	0	1
2MC	Lower St. Lawrence									0
Detection Limits (ng/g)		20		1		5		1	2	
IJC Guidelines (ng/g)		100		1,000		Absent		-	-	

APPENDIX T

INVENTORY OF MUNICIPALITIES WHICH RECEIVED TERMITE GRANTS

1986-87 Actual

Borough of East York
City of Etobicoke
City of Guelph
Town of Leamington
City of North York
City of Toronto

APPENDIX U

ENVIRONMENTAL ASSESSMENTS APPROVED

1986-87 Actual

PROJECT NAME (Proponent)	PROJECT TYPE	SIGNIFICANT ENVIRONMENTAL FACTORS OF CONCERN	AUDITABLE CONDITIONS OF APPROVAL
Highway 69 - Parry Sound (Ministry of Transportation and Communications)	Individual (TC-NO-02)	- the splitting up of private property - mylonite deposit in the area (very rare geological occurance)	- comply with all conditions of the environmental assessment as amended - MTC to correct surface problems of the deck of the Sequin River bridge in order to reduce as much as possible the noise impacts on surrounding land uses
Manitouwadge Landfill Site (Municipality)	Individual (MU-0997)	- potential for birds at waste site interfering with air traffic at airport	- comply with all provisions of the environmental assessment
Guelph Area Supply (Ontario Hydro)	Individual (OH-TR-02)	- grass landing strip for a glider club: concern that the towers may interfere with landings	- comply with all provisions of the environmental assessment as amended - prior to construction Ontario Hydro shall discuss construction and mitigation details of Creek crossings with the MOE district office - prior to construction in area where PCBs are present, details of construction and monitoring, mitigation and restoration measures in that area will be discussed between Ontario Hydro and MOE

PROJECT NAME (Proponent)	PROJECT TYPE	SIGNIFICANT ENVIRONMENTAL FACTORS OF CONCERN	AUDITABLE CONDITIONS OF APPROVAL
Southwestern Ontario Transmission Study (Ontario Hydro)	Individual (OH-TR-02)	- effects on agricultural land - severing of farms	- comply with all filing, survey, construction, mitigation and related obligations set out in the environmental assessment - post-construction monitoring will be carried out where necessary - construction of the undertaking and related activities shall proceed only after consultation with MNR - Ontario Hydro will prepare a Right-of-Way Development Plan - the As-Constructed Plan, the Environmental Concerns List and the Right-of-Way Management Specifications shall be filed with the EA Branch
Harbourfront LRT (T.T.C.)	Individual (TP-TT-02)	- disposal of excavated materials - traffic disruptions during construction	- contact with emergency services - MTC approval of alternate Queen's Quay portal - soil management strategy to MOE
Railway Spur to Moosonee Airport (ONTC)	Individual (ON-AA-02)	- none	- none

PROJECT NAME (Proponent)	PROJECT TYPE	SIGNIFICANT ENVIRONMENTAL FACTORS OF CONCERN	AUDITABLE CONDITIONS OF APPROVAL
Dredging of Keating Channel (MTRCA)	Individual (CA-MT-02)	- effects of sediment loading and dispersion on water quality - potential loss of dredged material during transport to and disposal at Leslie St. Spit endikement - possible inter-cell sediment movement - containment of dredged material	- to comply with conditions of environmental assessment - mandatory construction conditions and structures are outlined - access route to cells for disposal is specified - the timing of the commencement of dredging - development of a monitoring program - submission to MOE of annual operations reports starting October 1987
Proposed Assumption - Centennial Park Seawall (ERCA)	Individual (CA-ER-02)	- none	- comply with all conditions of the environmental assessment
Belleville Ice Management - Phase 1 (MRCA)	Individual (CM-MO-02)	- backwater effects of dam on municipal drain outlet - backwater effects of dam on Highway 401 bridge - effect of ice control structures on potential energy resource development - recreational water quality - groundwater contamination	- comply with the provisions of the environmental assessment - study the results of the backwater effects of proposed weirs of provincial hwys and related facilities - submit design details to MTC for approval and a compliance report to EA Branch prior to construction of weirs - compliance reports to EA Branch, MOE and MTC at end of each construction year - construction must commence within five years of approval and weirs must be built within 11 years

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